Rush-Presbyterian-St. Luke's Medical Center

The Magazine

SPRING 1982

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The Magazine

of Rush-Presbyterian-St. Luke's Medical Center
volume 6, no. 1/Spring 1982

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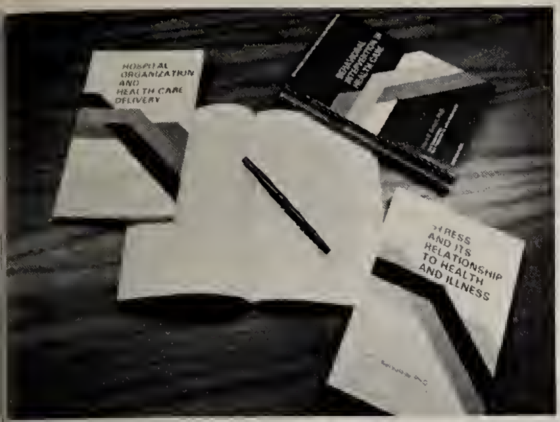
HOSPITAL ORGANIZATION AND HEALTH CARE DELIVERY
STRESS AND ITS RELATIONSHIP TO HEALTH AND ILLNESS

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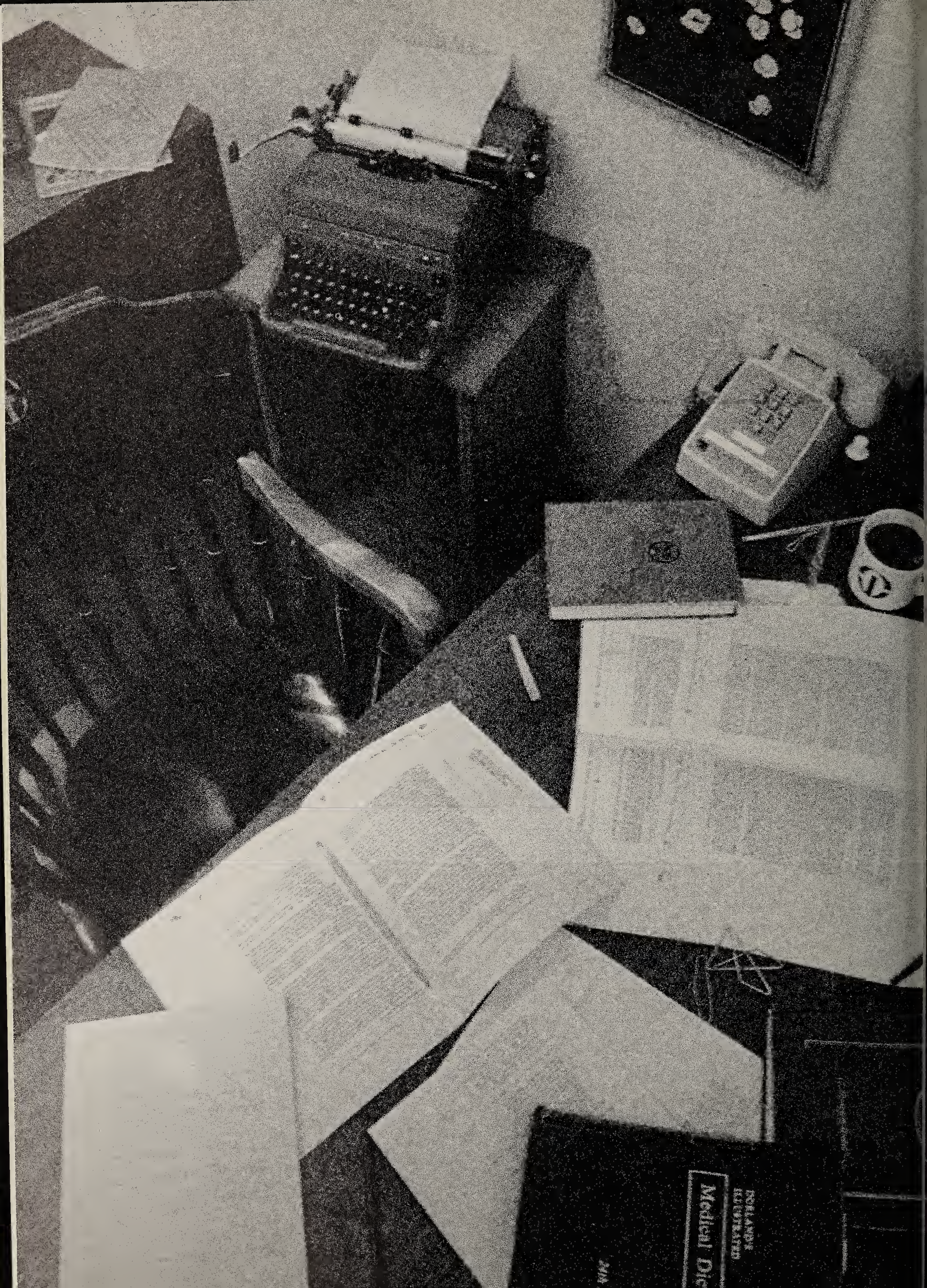

Medical Dic

Rush Authors and alley Slaves"

By Florence Goodman

"expression is the need of my soul..."
...archy the cockroach

Enhancing the medical literature are more than a dozen books published in late 1981 or readied for release early in 1982 by members of the Rush University faculty. The list offers diversified reading, ranging from a textbook on surgical intensive care to an indepth look at the concept of primary nursing, and from studies of current interest to the behavioral scientist to others focusing on hospital organization. There is also one physician's first excursion into fiction—a novel laid in a medical teaching center, and which has been chosen as an alternate Book-of-the-Month Club selection for June.

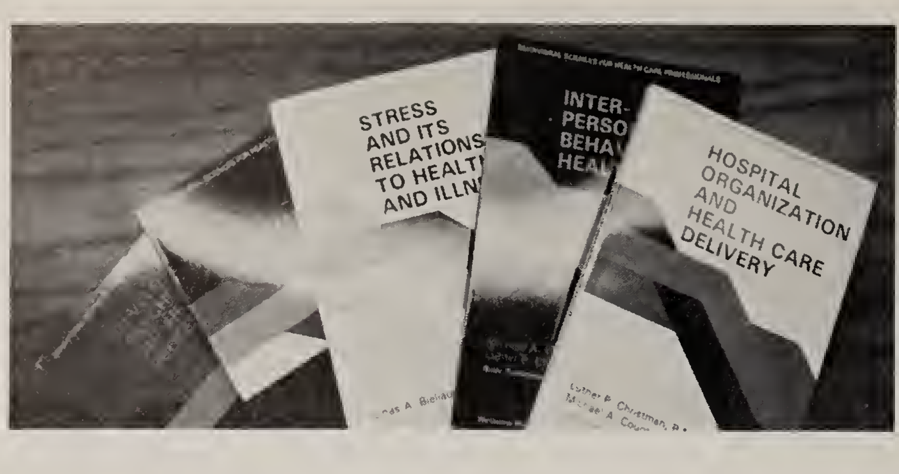
To reach a wider audience, almost all of the authors have tried to forego much of the specialized language usually associated with the health professions and which at times has led the captious to find in the linkage of "medical" and "literature" a category of oxymoron. An obvious exception is Marshall Goldin's textbook, **Intensive Care of the Surgical Patient,** Second Edition (Chicago and London, Year Book Medical Publishers, Inc.). Dr. Goldin, assistant professor of surgery, Rush Medical College, necessarily uses the precise vocabulary of his specialty in communicating to other professionals and students. His book, first issued in 1971, has been updated and revised to include the most recent developments in the field.

Sue Thomas Hegyvary, R.N., Ph.D., is proofing the galleys on her book, to be published in May, charting the evolution of professional nursing practices from the pre-Christian era and, within a cultural perspective, also discussing the development of primary nursing here and abroad. Dr. Hegyvary, associate dean in the College of Nursing, recalls her first meeting with her publisher's acquisitions editor: "We lamented the untimely demise of the English language, and I assured her my book would not be 'operationalized' in terms of, you know, facilitating development..." (Readers are directed to the excerpt on page 10 to see how well Dr. Hegyvary kept to her promise.)

Why write a book? In a panel discussion last spring, Dr. Hegyvary offered her reasons: "It clearly is not a get-rich-quick scheme; it has to be done in addition to all the work we already have to do, and it likely will consume many evenings and weekends. For me, it was a combination of personal expectation and confidence that I had some good information, observations and analysis that had not been published.

"For material, I looked not only in Chicago but at every hospital I could find that had reported primary nursing in the literature in different countries. I found that it (primary nursing) is not related to location at

Sue Thomas Hegyvary, R.N., Ph.D.


STRESS AND ITS RELATIONS TO HEALT AND ILLN
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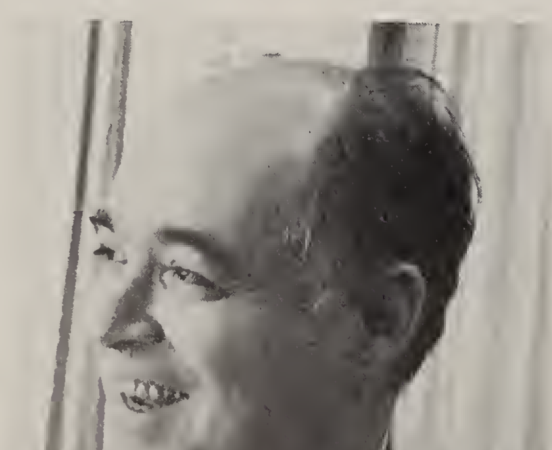
HOSPITAL ORGANIZATION AND HEALTH CARE DELIVERY

all. It is a product of international literature and travel and exchange between nurses in different countries since the 1960s."

Part one of **The Change to Primary Nursing** serves as an introduction to professional practice. Part two is a study of primary nursing in Australia, Japan, three European countries and North America. Part three examines the change to primary nursing from the beginning, including assessment, plan for action, implementing and maintaining the system, and evaluation of results. Part four is a look to the future. Since primary nursing is not universally accepted, the book also explores the controversy accompanying the movement to implement primary nursing and the resistance encountered.

Harold Klawans, M.D., professor of neurology and pharmacology in Rush Medical College, gave himself wide stylistic latitude in his novel **Sins of Commission**, set in Chicago's imagined "Austin Flint Medical Center." (The real Austin Flint was one of the first four faculty members of Rush Medical College, as professor of theory and practice of medicine; the others were Daniel Brainard, M.D., founder of Rush Medical College; James Van Zandt Blaney, M.D.; and John Evans, M.D., who went on to found Northwestern University and to have the town of Evanston named after him.)


Harold Klawans, M.D.

"I started in the fall of 1975," Dr. Klawans says, "on Labor Day, and completed the book in January, 1976. I wrote it to prove to myself that I could write a book that had a beginning and an end and told a story."

The novel's central character is Paul Richardson, a dynamic diagnostician and devoted teacher, whose peripatetic stream of consciousness pinpoints the reader's way into esoteric reaches of medical history and practice, pharmacology, literature, philosophy, classical music and, by no means least, the heyday of White Sox baseball in Chicago. Other figures in the hospital setting, particularly including neurological house staff and medical students, round out an ingenious plot of crime and detection. (See page 17).

Dr. Klawan's interest in criminal detection is a byproduct of his interest in Sherlock Holmes on whom he lectures as part of a humanities course at Rush. "I'm not a fanatic," he has said. "I'm a fan who thinks Holmes can be a very useful teaching device. One of the largest deficiencies of our educational system is that acute observation is almost lost. By reading Holmes, you learn how to look at... minor deviations from normal and interpret them. That's what Sherlock Holmes did."

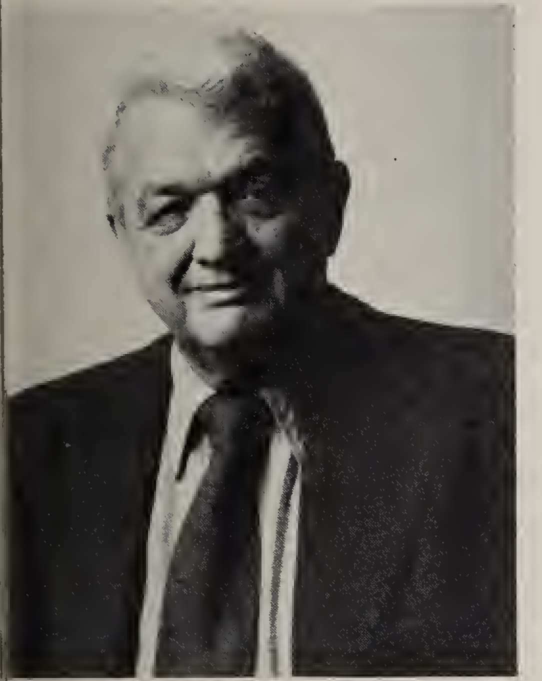
Michael A. Counte, Ph.D.

Possibly the most ambitious editorial enterprise in scope and volume is a series of ten monographs in the behavioral sciences by Rush University authors under the general editorship of Michael A. Counte, Ph.D., assistant professor and section director of social sciences in the department of psychology and social sciences of Rush Medical College.

Five of the books already have been published in both hard and soft cover by Westview Press and the remaining five will be out this spring and summer. Dr. Counte, who has been living with the project on and off since he first conceived it in 1977, described its genesis as follows.

"Prior to the mid-70s, courses in behavioral sciences were icing on the medical school curriculum, not mandatory. Not all medical schools offered courses in the behavioral sciences and those that did developed their own curricula. Some materials had been developed for nursing students and students in the public health field, but their transferability to medical

> *"For me, (writing a book) was a combination of personal expectation and confidence that I had some good information, observations and analysis that had not been published."*
>
> **Sue Thomas Hegyvary, R.N., Ph.D.**



Luther P. Christman, R.N., Ph.D.

hool settings was limited.

"Then, a few years ago, a section the behavioral sciences was ded to the National Boards for edical students. Those of us who ere faced with offering these urses had very little luck in ding materials we could use. ost of what was available was dressed to graduate students, not the medical student who had ent much of his or her early edution mastering the basic sciences d who now needed behavioral iences material with clinical plicability. Finally, since each edical school curriculum is ferent, there was a clear need for afeteria-style' selection of texts; e school might require three ts, another seven."

n 1979, Dr. Counte brought gether a group of his colleagues the department of psychology d social sciences and invited em to take part in his proposed blications project: ten different nographs in the behavioral scices to help the faculty solve its n course requirements as well those of faculty at other colleges he health professions faced with a similar paucity of instructional materials.

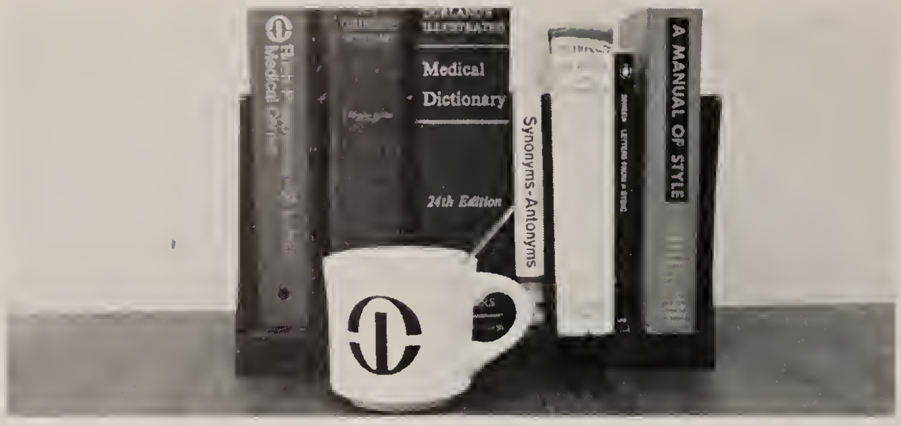
"Almost all of us were young and had been teaching for four or five years. We had been getting feedback from students about what they'd like to have available. The group was very enthusiastic and each accepted assignments to develop 2-page summaries of what should be covered under each topic," said Dr. Counte. Disciplines represented in the group were clinical psychology, social psychology, medical sociology, and nursing. No particular "school" was to be touted: rather, the focus would be on modern main-line behavioral sciences, it was agreed.

Dr. Counte then developed a prospectus on the series and began taking it with him to discuss with publishers' representatives at professional meetings. After about a dozen such contacts, and three publishers having expressed interest, an agreement was finally entered into in 1980 with Westview Press, with Dr. Counte as general editor.

Then the hard part came, making the concept a reality. "With two exceptions, none of us had written anything longer than our doctoral dissertations and we didn't look back on *that* experience with relish," Dr. Counte said. "We also set some goals for ourselves as authors: to be interesting and informative but at the same time academically and professionally respectable. The potential readership meanwhile had been expanded to include students in medicine, nursing, dentistry, pharmacy, and public health, as well as professionals who already were in practice but who had not taken courses in the behavioral sciences.

"In some universities, medical, nursing and other students take classes together, so this also meant that we had to use language understandable to people with a variety of backgrounds, interests and career objectives. In other words, eliminate jargon wherever possible. In this we had marvelous help from the publisher's editors, since they were all laypersons and questioned everything they didn't understand. At times I had difficulty understanding *why* they didn't understand, but it usually meant that I or the other authors were too close to our subject. There were also times when we simply had to dig in our heels and resist change, but I know all of us will be eternally grateful to our editors."

Laura Beth Gordon, Ph.D.



As general editor, Dr. Counte's primary responsibility was to keep the various authors on deadline and to serve as liaison between the publisher and the authors. At one point, after a number of deadlines had been missed, weekly meetings were initiated by Dr. Counte to report on progress and provide group pressure and support. "These were very useful, although they did occasionally cause some short-term hostility. I think we all recognized that if we didn't make significant momentum, the project would die, so we agreed to keep up the weekly meetings until we had delivered five manuscripts to the publisher. When we did that, that was the watershed and the rest has been relatively easy downhill going."

Dr. Counte said one of his most onerous jobs was to keep the publisher informed as to his whereabouts at all times, even on vacation. "I understand why, of course; the publisher has a heavy investment and has to be able to get answers and clarifications at any point in the production schedule. Still, it was a loathsome responsibility."

One of the most interesting insights Dr. Counte came by during this project was into the variety of ways in which authors worked. His own style, he found, was to do an intensely detailed outline of each chapter, perhaps running 10 single-spaced pages, before sitting down to write. "I'd spend weeks on the outline, but only a day or two in the actual writing since it was, in a way, already written. Other people would show me a half-page outline and work outward from that, in clumps. Luther Christman and Jeff Salloway both had written a lot before and were reasonably comfortable about handling their jobs—Luther used to do parts of it on a writing pad while vacationing at the beach. For the rest of us, it was a grinding process, though."

Westview is planning a first printing run of 10,000 copies of each book, 2,000 in hardcover and 8,000 in paperback, for a total of 100,000 volumes. Depending on the success of the project, Dr. Counte is hopeful that other titles in the series also may be developed, among them a possible book on health care in non-western settings.

Here, then, with the help of publisher's blurbs, are descriptions of the contents of each book in the series "Behavioral Sciences for Health Care Professionals."

Already published:

Interpersonal Behavior and Health Care, by Michael A. Counte, Ph.D., and Luther P. Christman, R.N., Ph.D., dean, Rush University College of Nursing.

Health care professionals continually are puzzled by the presence in their offices of people who show no symptoms of physical illness. Likewise, they are hard pressed to understand those who, in the face of obvious need for medical help, refuse to seek it. This textbook delves into how interpersonal processes influence the origins, functions and change of health-related beliefs and attitudes.

The authors address such questions as: Why do so many individuals with non-organic complaints seek aid from medical personnel? Why do so many people delay seeking aid in the presence of medically serious symptoms? How are social networks, such as lay referral systems, linked to the use of medical services? What constitutes the cluster of attitudes related to actual behavior during treatment (for example, compliance with medical instruction)? And wha
do field experiments suggest wit
regard to modifying health belief
and attitudes?

**Behavioral Intervention in Healt
Care**, by Laura Beth Gordon, Ph.D.
assistant professor in the depart
ment of psychology and socia
sciences, Rush Medical College.

It has been demonstrated tha
many medical problems, such a
insomnia, hypertension, obesit
and asthma, respond readily an
reliably to behavioral modificatio
Yet, behavioral intervention ha
traditionally been a difficult area t
assimilate into the medical an
nursing curricula.

This text considers those med
cal problems that most ofte
confront the nurse and physicia
and that respond to behavioral o
counseling techniques. Wit
emphasis on how behaviora
intervention relates to clinical pra
tice, the author examines suc
topics as the role of the patient
behavior in the symptom or diseas
how the health care profession
may identify which persons wi
respond well to individual or famil
counseling, and the treatment
disease versus mental health mai
tenance.

**Stress and its Relationship t
Health and Illness**, by Linas
Bieliauskas, Ph.D., director of clin
cal training and assistant profess
in the department of psycholog
and social sciences, Rush Medic
College.

The term "stress" takes on
variety of meanings and has a wid
range of applications in health car
In this text, Dr. Bieliauskas review
the history of research on stress
relation to health and illness an
shows the evolution of prese
stress theory. He discusses th
hormonal parameters of stres

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>
> **Harold Klawans, M.D.**

Linas A. Bieliauskas, Ph.D.

ysiological indications of and
sponses to stress, cognitive stress
sponses and coping mecha-
ms, and life event relationships
illness.

r. Bieliauskas also describes
earch linking stress to several
eases where evidence is avail-
e about how much and in what
ys stress affects illnesses. He
ncludes with a summary of
rent knowledge about the con-
t of stress, research on stress,
how these relate to health care.

**velopmental Psychology for the
alth Care Professions. Part 1—
enatal Through Adolescent
velopment**, by Katherine A.
lingham, Ph.D., assistant
fessor in the department of psy-
logy and social sciences, Rush
dical College.

his text is the first of a two-
ume set that covers the entire life span, focusing on normal psychological development. Volume 1, which discusses prenatal through adolescent development, gives the student a knowledge of the basics of normal development. It presents specific research findings in developmental psychology that are most relevant to health professionals, such as the effects of early hospitalization on the mother-infant interaction. For each age cohort, case illustrations show clinical applications of these findings, followed by a discussion of developmental tasks for the age. The focus throughout is on topics of interest to the health care professional.

Hospital Organization and Health Care Delivery, by Luther P. Christman, R.N., Ph.D., and Michael A. Counte, Ph.D.

How a hospital is organized and how that organization functions has a direct bearing on the way medical professionals practice health care and on the quality of health care they provide. The authors point out that it is not enough for health care professionals to be clinically competent; in this age of advanced technology, they must have a sophisticated grasp of how the total hospital system functions and how that system can best be utilized to benefit individual patients. In the face of rising pressures for changes in the delivery of health care, only by becoming completely familiar with the existing system and their interacting roles within it can members of the health professions hope to make constructive changes for the future.

Dr. Christman and Dr. Counte begin by looking at common methods of hospital organization, illustrating through discussion and case studies how organizational practices, conflicts within the hospital, and organizational change—or resistance to change—affect both the health care professional and the kind of care given. They show how a hospital's organizational pattern relates to the population it serves, to the cost of health care, and to the quantity and quality of care provided. Finally, they air current criticism of hospitals and speculate about the kinds of organizational changes likely to occur in hospitals over the next decade.

Katherine A. Billingham, Ph.D.

To be published in 1982:

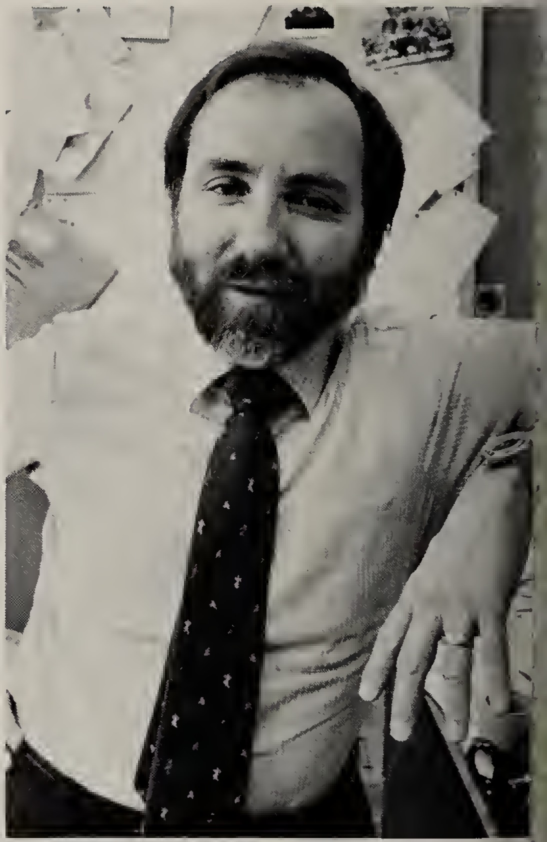
Biological Bases of Human Emotion and Cognition, by Alfred W. Kaszniak, Ph.D., assistant professor in the department of psychiatry, University of Arizona College of Medicine. Dr. Kasniak was on the faculty of Rush Medical College when he began this book. (August, 1982).

This textbook provides an introduction to the fundamentals of biobehavioral science as it relates to health care. Its primary focus is on those areas of biobehavioral research—such as psychophysiology of emotion and sleep, memory and the brain, and behavior genetics—relevant to the practice of medicine and nursing. Illustrations from the author's own practice introduce each topic, showing the clinical application of the material to be discussed; these are followed by a discussion of the specific relevance of the area for clinical practice, an introduction to fundamental concepts, a review of selected studies, and a summary and review section. Study questions, requiring the student to relate material learned to hypothetical case histories, complete each section.

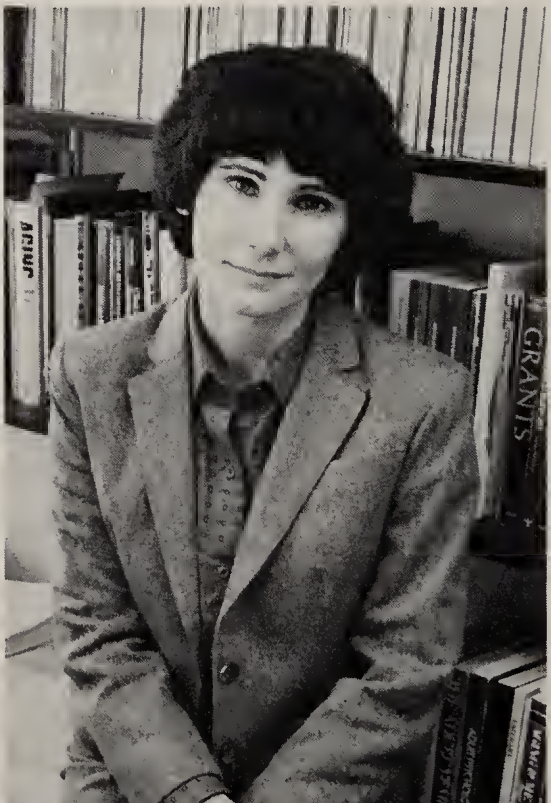
Health Care Delivery Systems, by J.C. Salloway, Ph.D., associate professor in the department of psychology and social sciences, Rush Medical College.

The day-to-day behavior of the individual physician is, in large part, a function of the social structure of the health care delivery system in which he or she works. Behavior with respect to patients, colleagues, and other professionals is determined by the very nature of the system that surrounds the practitioner-group practice, hospital-based specialization, solo practice, public funding, third-party reimbursement, health-maintenance organizations, etc. Likewise, perceptions of issues such as quality care, availability of care, and patient satisfaction also are a product of the structure.

Obviously, the health-care system is of vital concern to medical students, but it often is neglected in the course of medical training or is presented only briefly during the first two years of study. This text fills the gap, responding to the needs of future physicians
initiating them into the concep
and terms that will become mor
familiar as they complete their edu
cation and establish practices.



Jeffrey C. Salloway, Ph.D.



Martita A. Lopez, Ph.D.

Introduction to Social Epidem ology, by J.C. Salloway Ph.D
(September, 1982).

One of the difficulties in teachin
behavioral science to the medic
student is the problem of demon
strated relevance. Initially, medic
students do not see the need f
knowledge of such subject matte
in clinical practice. The goal of th
volume is to place problems of cli
ical interest in their appropria
social context, at least so far as di
ease etiology is concerned. Mo
els of causal linkages show th
student how patterns of illness ca
be broken both by communi
action and by altering the behavi
of individuals. Of special intere
will be the final chapter, which se
forth a social epidemiologic
approach to primary care practic

> *"We set some goals for ourselves as authors: to be interesting and informative but at the same time academically and professionally respectable."*
>
> **Michael A. Counte, Ph.D.**

This book is intended to precede **terpersonal Behavior and Health are**, particularly because it ovides the basic vocabulary necsary to understand social aspects health care practice. Lengthy ethodology has been avoided as longing more appropriately to a urse on community health.

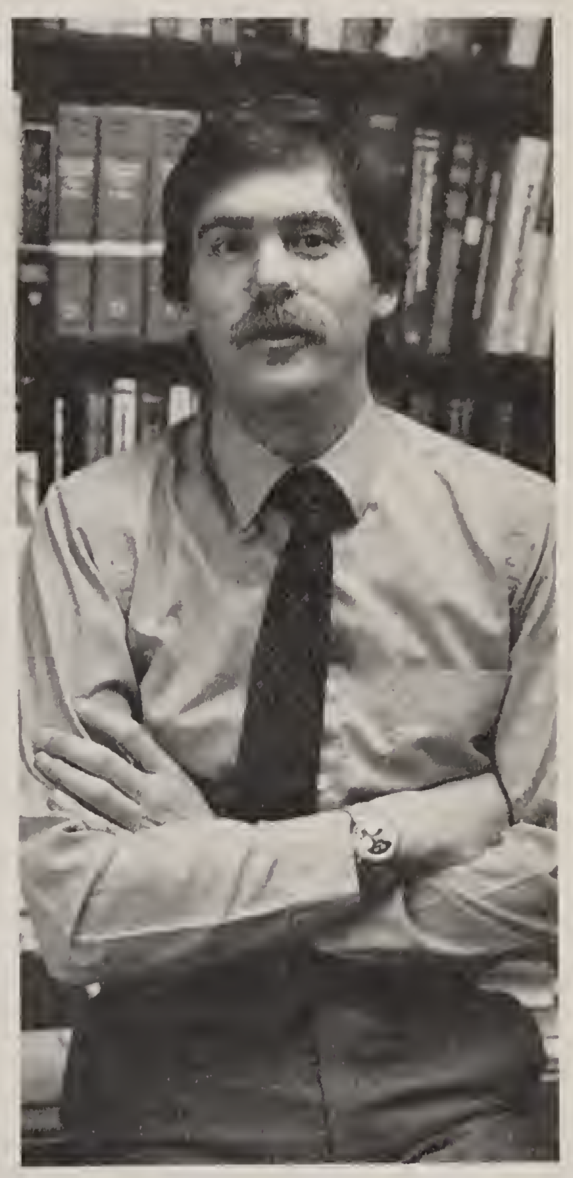
evelopmental Psychology for the ealth Care Professions, Part –Young Adult Through Late ing, by Martita A. Lopez, Ph.D., d Howard S. Feldman, Ph.D. une, 1982).

Both Dr. Lopez and Dr. Feldman e assistant professors in the partment of psychology and cial sciences, Rush Medical Colge. Dr. Lopez also works extenely in the Johnston R. Bowman ealth Center for the Elderly. Dr. ldman is director of the office of havioral studies, Rush-Presbyian-St. Luke's Medical Center.

The second in a two-volume set developmental psychology, this ok explores normal psychologal development from young adultod through late aging. Its focuses clude sexuality, marriage and renthood, and career choice in ation to the incidence of illness d future illness risk. The section adulthood expands on the ects of work and family life, tying reer to the concept of life stress d illness. The last chapter phasizes changes occurring in l age, particularly as they relate health care, and concludes with discussion of the psychological pects of death and dying.

e Influence of Individual Differces in Health and Illness, by has A. Bieliauskas, Ph.D. (August, 82).

This volume reviews the uniquess of individual personality, looks actors that contribute to aspects of personality, and shows how personality factors affect health-related issues. Dr. Bieliauskas reviews theories of personality functions, with stress on the influence of unconscious factors in relation to illness. He then illustrates the importance, from a health care viewpoint, of recognizing interpersonal factors, and describes both behavioral and cognitive approaches to the patient-physician interaction. In the final chapters he examines how the patient's intelligence and intellectual participation affect the health care process, summarizes individual differences that affect health care, and closes with a discussion of concepts valuable to health care practitioners when coping with human differences in medical treatment.



Howard S. Feldman, Ph.D.

Additional Publication News

As *The Magazine* went to press, we learned of two more books by Rush authors scheduled for release in 1982.

Health Fact Book U.S.A., co-authored by Thomas A. Madden, M.D., associate professor, preventive medicine; Irene R. Turner, administrator, Rush Cancer Center, and Edward J. Eckenfels, assistant dean, student counseling, Rush University.

Originally written for students in Rush Medical College, the book is a compilation of health-related data designed for ready reference. The material is divided into five sections: The Population, Patterns of Disease, Health Care Delivery, International Comparisons and The Prevention of Disease/The Promotion of Health. Appendices list major legislation in health and welfare in the U.S. from 1900 to 1980 and governmental agencies responsible for selected health related programs.

Basic Pathophysiology: A Conceptual Approach, by Maureen Shekleton, M.S.N., R.N., assistant professor, medical nursing and coordinator of the Medical/Surgical Graduate Program, Rush University, and Maureen Groer, of the University of Tennessee, Knoxville.

The second edition of this textbook, originally published in 1979, is scheduled for release in fall, 1982. It expands on the material in the first edition and includes information on current research in the field. ®

The Change Toward Professional Practice in Nursing

Excerpts from

The Change to Primary Nursing: a cross-cultural view of professional nursing practice

by Sue Thomas Hegyvary, Ph.D., R.N., F.A.A.N. Published by C.V. Mosby Company, St. Louis, 1982. Reprinted by permission of the publisher.

About the Author

Sue Thomas Hegyvary, Ph.D., R.N., became "obsessed" with the idea of writing a book on the change to primary nursing after visits with nursing colleagues in Australia and Holland convinced her that "national boundaries made little difference, our communication was professional, not political."

Dr. Hegyvary brought an excellent background to her subject. She was among the group of professionals which implemented primary nursing at Rush-Presbyterian-St. Luke's Medical Center. This project resulted in the "Rush Model for Nursing," a nationally recognized model of care.

Her book, *The Change to Primary Nursing: a cross-cultural view of professional nursing practice,* discusses the development of primary nursing in seven countries: Australia, Japan, Belgium, The Netherlands, Norway, Canada and the United States.

In the final chapters, Dr. Hegyvary provides information and guidelines for nurses interested in the change to primary nursing, assessing strengths and weaknesses in the achievement of primary nursing and pinpointing future development and needs for education, for leadership and for cooperation.

Dr. Hegyvary, who holds the doctorate in sociology from Vanderbilt University, joined RPSLMC in 1972 as an assistant professor in the College of Nursing. She is now professor of nursing, associate professor of sociology, and assistant vice president and associate dean for nursing. Some of her recent research has also centered on nursing care. She has served as principal investigator on two such studies: "Monitoring Quality of Nursing Care in Four Specialty Areas," on a contract with the Department of Health, Education and Welfare, Health Resources Administration, Division of Nursing, and "Patient Adaptation and Quality of Nursing Care in Two Dutch Nursing Homes," under the auspices of the National Hospital Institute, Utrecht, Netherlands.

It is an understatement to say that nursing is in a state of change in most of the world. Indeed, what aspect of life and work is not changing? The general direction or at least desire for change in nursing is the improvement of the quality of nursing care. One means toward that end is "primary nursing," or as some prefer to call it, professional nursing practice. The nursing literature from many countries addresses this direction of change. Although the words may differ, the theme is the same: increasing accountability and autonomy, better coordination and continuity of care, and an overall improvement in the quality of nursing services.

The words are impressive, but the movement is not without controversy. Some say it is a threat to other health care providers, a self-serving attempt to gain a more powerful position in the political arena of health care. Nurses insist that the central focus is better care for those they serve, and they feel no need to deny or apologize for the fact that better quality of care can only lead to better quality of the profession.

Occasionally there does seem to be a self-serving push in some actions and statements of organized nursing—the emphasis on power on recognition, on advancing the position of nurses. These efforts could be highly positive if kept in the perspective of concern for patients. Unfortunately, there is a growing tendency for the patient and family to get caught in the cross fire.

There is no way more certain to
feat the purposes and ideals of
rsing. Who cares or should care
out the status of nurses? If other
spital services were considered
or, would we agree to sweeping
anges for workers performing
ese services simply because of
e feelings of the staff? But many
ople care a great deal what hap-
ns to patients and families (espe-
ally when they are those patients
families), what kind of care they
ceive, and what it costs. Only to
e extent that the professional
atus of nurses is directly related
patient care, and with real actions,
t with shallow jargon and worn
ches, will the pleas and demands
nurses make sense to others…

If nursing care is significantly up-
aded, as is essential in a change
om task-centered to primary
ursing, the benefits of status,
ower, and recognition will accrue
a result of excellence rather
an confrontation. We are a long
ay from that ideal.

It is not my intent to "sell" primary
ursing. My assumption is that
any people are interested in this
pic and want accurate, detailed
escriptions of what it is, what has
een tried (both successfully and
nsuccessfully), and how to pro-
eed with implementation if they
oose to do so…

The heart of nursing is the care
ach nurse gives each patient and
mily. A nursing service organiza-
on has the duty to keep that heart
ive and healthy and working well
ith other parts of the system.
ese statements may appear
lf-evident. If we look carefully and
objectively as possible at the
actice of nursing, however, we
equently find neither "patient-
entered" nursing care nor the organizational support for it. At the same time, it is rare not to find nurses using phrases that quickly become cliches, such as "individual nurse-patient relationship," "patient-centered care," and "professional nursing practice." We can cite many examples of attempts, with varying degrees of success, to put these words into action. Such efforts frequently are called primary nursing. In the past 3 years nursing literature from a dozen countries in North America, South America, Europe, Asia, and Australia has made reference to it.

The immediate purpose of this book is to describe and compare the implementation of primary nursing in several cultural settings as a process of social change. The ultimate purpose is to present a set of ideas, details, observations, and comparisons that will assist nurses in directing their energies toward a more professional model of practice.

This analysis is valuable for several reasons. First, there is considerable confusion about primary nursing as the "new thing" that everybody ought to do. Although it seems to be a good thing, jumping into it with little understanding or flexibility can result in failure. There is no one set of details or instructions that fits every institution or unit. Analyzing the process of change in a wide variety of settings should increase understanding about what may be appropriate in a particular setting.

Second, it is all too easy to be rather parochial in our thinking, that is, to believe our way is the best or maybe the only way. It is exciting to learn that nurses half a world away have some of the same ideas we do and in some cases have done more with less than we have. How did they do it, and why? Is the professional model a real trend? In exploring each cultural setting and the nursing efforts within it, we can understand how and why professionalization of nursing practice occurs…

DEFINITION OF PRIMARY NURSING

Several years ago my colleagues and I were beginning to travel the long road toward primary nursing at Rush-Presbyterian-St. Luke's Medical Center in Chicago. In the middle of the pilot project my critically ill mother-in-law was admitted to a unit not included in the project. After several days of frustration turning to desperation, my Hungarian father-in-law, who spoke no English but perceived the situation well, said "Susie, all these people are very kind to Anya, but she's confused enough as it is. Can't you arrange it so the same nurse takes care of her every day?"

Although he knew no details of my work at that point, he gave me in lay terms an operational definition of primary nursing. His plea echoed later when, seeking assistance for her, I asked a group of nurses, "Who's taking care of Mrs. Hegyvary this afternoon?" The answer: "Oh, we all are! One of us will be in when we get time." It is likely that patients and families in most countries could report similar frustrating experiences.

Was this woman receiving "patient-centered care"? Can we call it professional nursing when contact with the patient is on the basis of what task has to be performed, when one of the nameless and faceless group takes the assignment when she can work it into the schedule of other tasks?

Primary nursing is used to reori-

ent and reorganize nursing practice to prevent events such as the one just described. It is both a philosophy of care and an organizational design. It is not simply a way of assigning nurses to patients, but rather a view of nursing as professional, patient-centered practice.

The basic idea is simple: the nursing care of a specific patient is under the continuous guidance of one nurse from admission through discharge. One nurse on each shift provides total care for the same group of patients day after day. Round-the-clock care is coordinated for each patient by the nurse designated as the primary nurse for that patient.

In that basic idea are the following essential elements of the primary nursing model:

1. *Accountability.* One nurse, the primary nurse, is answerable for the nursing care of a patient 24 hours a day throughout the patient's hospitalization.
2. *Autonomy.* The primary nurse has and acts on the authority to make decisions about nursing care of her patients in the mode of professional self-governance.
3. *Coordination.* Nursing care is continuous around the clock, with smooth, uninterrupted flow from shift to shift and with direct communication from care-giver to care-giver.
4. *Comprehensiveness.* Each caregiver performs all required nursing care for a patient during a specific time period such as a shift.

The most basic and most frequently misinterpreted criterion is accountability. In primary nursing it is no longer "the group" that is accountable for care; it is the individual nurse, with a name, a face, and a professional responsibility and identity. To whom is she accountable? First and foremost, the nurse is individually accountable to the client: the patient and family. She is also accountable to professional colleagues to maintain standards of practice, to the institution in which she is employed to carry out her professional duties, and of course before the law to perform all activities in accordance with the legal code.

The primary nurse is accountable for nursing care of a specific patient and family 24 hours a day. This point often is misinterpreted to mean that the same nurse must provide hands-on care around the clock or be continuously on call. The role of the primary nurse is comparable in principle to that of the attending physician. Although several additional physicians usually assist or provide coverage for medical care, there is one primary physician who directs the medical regimen. The same principle holds in primary nursing.

Autonomy of the primary nurse means self-governance in making professional decisions. This term, when used too zealously or misinterpreted, can create havoc. It actually means only that the nurse decides and acts on decisions about nursing care. It does not mean that the nurse no longer carries out medical orders, or refuses to listen to anyone else, or submits a separate bill to the patient—among the many misinterpretations nurses have reported. Autonomy in individual actions allows and encourages a high degree of interdependence and cooperation among members of a group or team of care-givers.

Coordination of care refers both to activities and to the dimension of time. Its basic qualities are consistency and harmony. The parts c care fit together harmoniously an continue at the same level over period of time. Coordinated nursing care ensures that nurses carin for a patient and family have th same data base, the same plan, an the same approach to care. Thu the patient is not faced with a nigh nurse who has no idea of what goe on during the day. Although coo dination is everyone's responsibi ity, the heaviest accountability for falls to the primary nurse.

The criterion of comprehensiveness is sometimes referred to a total patient care. One nurse give all nursing care for a specific pa ient and family during a designate period of time, usually a shift. In 24-hour period, then, assumin three 8-hour shifts, three nurse provide all the nursing care for given patient and family. One of th three is designated as the primar nurse; the other two, who may b called associate nurses, are respor sible to the primary nurse to carr out the agreed on plan of care or t revise it as conditions change. Th criterion of comprehensivenes precludes assignment by task, sinc each nurse performs all require tasks for her assigned patients.

In the theoretical definition c primary nursing, these four elements are essential. It is possibl and realistic that not all four ar achieved absolutely in every situation called primary nursing. However, they set the standard or goa for defining the essence of primar nursing.

PRIMARY NURSING AS PROFESSIONAL PRACTICE

"Primary nursing" is a term tha has recently been substituted fo that often used and abused phras "professional nursing practice

> *"The heart of nursing is the care each nurse gives each patient and family. A nursing service organization has the duty to keep that heart alive and healthy and working well with other parts of the system."*

achel Rotkovitch has urged that e not use the term "primary nurs- g" at all because it can be con- sed with primary care and because e term "professional nursing ractice" is adequate. Unfortu- ately, both terms have lost some npact and meaning from overuse. sing a standard definition of "pro- ssional" however, Rotkovitch is ght. A professional practitioner has ceived extensive, specialized ducation to provide a client with unique, autonomous service ased on scientific knowledge and ethods and the standards and hics of the professional group. sk-centered nursing does not fit is definition; primary nursing omes close.

Many people have debated hether nursing is a profession. ome have concluded that it falls ort of that stage of development ecause of a lack in the body of nowledge required. Does nursing ot even more seriously miss the ark because of the frequent lack f responsibility and accountability r service to individual clients? he nurse who merely carries out rders and routine tasks does not se a scientific approach to prac- ce, exercises no autonomy in aking decisions, and does not ave a relationship of accounta- ility with an individual client, even ough she still is legally account- ble for performing tasks properly. ursing is a profession only to the xtent to which nurses perform professional" roles. Merely per- rming tasks or delegating every- ing to others does not meet the riteria, nor does holding the title professional nurse" ensure that e nurse performs at a profes- ional level.

Primary nursing is as close as e have come to truly professional practice in an institutional setting. Although it still falls short of a full professional model, the terms "primary nursing" and "professional nursing" are used almost interchangeably in this book. As primary nursing becomes more predominant, surely we will be able to define further the scientific body of knowledge called nursing and to clarify the nature of interdependent but autonomous roles of nurses.

The primary nursing model did not arise out of nowhere, nor is this concept totally different from styles that have preceded it. A brief review of some major changes in nursing practice in the past century shows how and why primary nursing has evolved.

EVOLUTION OF PROFESSIONAL NURSING PRACTICE

Primary nursing is a relatively new term but not altogether a new idea. The history and trends in nursing over the past century tell the story of changes in the focus and organization of nursing care, particularly in hospitals. This text defines primary nursing as a stage of development in the direction of professional practice.

ORIGINS OF MODERN NURSING—Caring for the sick is as old as sickness itself. Details of nursing of the sick date back thousands of years before the Christian era. Specialized care of the sick has been practiced by highly civilized populations such as the ancient Greeks. Their center for care was the Temple of Hygeia, named for the goddess of health. In addition to nursing the sick, the ancient Hindus gave great emphasis to the prevention of disease, a growing theme in modern nursing and health care.

Nursing care as a deliberate and organized service has existed a relatively short time. We usually attribute the origins of "modern" nursing to Florence Nightingale and her contemporaries in the nineteenth century. Nightingale lived in an era of little scientific knowledge about care of the sick. She went into the Crimean War to care for the wounded, and she began to raise questions that others had not considered. She was not merely an observer, a recruiter, a teacher, and an organizer; she took care of the sick in a more systematic way than generally was known. She kept data on the wounded—rates of infection, death rates, and types of treatment that reduced the trauma and death. She advocated formal education for people who nursed the sick.

The "Nightingale principles" soon were applied in England and were adopted in many parts of America and Europe. A major focus was training by apprenticeship. Increased emphasis was placed on training as the means of upgrading practice. These principles were spread internationally, mostly by religious nursing orders and the Red Cross.

Without question the level of "professional" practice as we now define it was low in those days. The base of scientific knowledge and the autonomy and authority of the nurse were extremely limited. Training by apprenticeship restricted the possibility of advancement of nursing because practitioners generally had a low level of knowledge and skill.

In the early part of this century, training programs increased and trained nurses assumed individual accountability for patients and families in many countries. There is evidence that nurses had a degree

of autonomy and authority, as well as influence on social conditions. M.M. Roberts said of the social and professional role of the American nurse at that time:

"Private duty nurses had abundant opportunity to know their patients and their families because severe illnesses, such as typhoid and pneumonia, were followed by long periods of convalescence. Skill in caring for these conditions was an important criterion for good nursing.... Nurses who made obstetrical practice a specialty accepted engagements for from one to three months. The more successful the nurses were in adapting themselves to conditions in the homes, the more they were recalled.... Intelligent and well informed private duty nurses exerted a very considerable influence among the families and friends of their patients."

Care of the sick at home was the custom before World War I. This "private duty" nursing set the stage for community health nursing and even primary care in later decades. However, a major change in the health care system—hospitals—forced changes in nursing.

With more patients treated in hospitals, nursing adapted to fit the style of institutions. This style tended to be hierarchical and authoritarian, based on military and religious traditions. Nurses had low status because of their low social class, sex, and lack of proper education. They were in fact "cheap labor" for the hospitals, not just for care of the sick but for myriad chores to keep the hospital in operation.

Students were trained as apprentices to those nurses. Although some nurses advocated higher education for nursing practice, norms were based not on educational principles but on the needs and environment of hospitals. The community and private duty nurses remained a separate breed for many years.

TASK-CENTERED CARE—The needs of hospitals for round-the-clock care of patients and an emphasis on order and efficiency set the tone for concentration on performing tasks. The social and economic upheavals of the 1920s and 1930s notwithstanding, nurses persisted in task-centered care in the highly structured, socially isolated atmosphere characteristic of hospitals.

Hospitals were (and often are still) organized in a rigid fashion. The very limited professional development of nursing, the division of labor among workers, and the influence of "scientific management" ideas about task analysis and specialization were among the factors that contributed to the task-centered focus of nurses. The terms "human relations" and "patient-centered care" were not coined until many years later.

A real change came with World War II, when untrained workers were recruited to assist the nurses. After the war they were retained for this purpose, but instead they became the care-givers. Nurses became increasingly removed from patients as less skilled persons performed the tasks of daily patient care.

The norm of nurse as the care-giver with accountability to patient and family was lost. Comprehensiveness and continuity of care belonged to another era. The more educated nurses became supervisors and teachers of students, who in turn were steeped in traditions and the status quo. Professionalization of practice stalled and perhaps even moved in reverse.

What had happened to the "profession"? Why was nursing in such a state of crisis? Although Florence Nightingale often is maligned for not advancing nursing more in her era, she undoubtedly would be embarrassed by the stagnation and low level of professional practice that has persisted throughout this century. Where were the educated nurses she had advocated? Where were the studies of nursing care and patient welfare?

In retrospect it can be argued that nursing was responding to immediate societal needs and may have had little choice in some decisions about manpower and organization. Its subservient role was reinforced by the medical profession and hospital administration as well as by the low status of women in society. The only significant move toward advancing the profession was occurring in a few universities. But in general nurses remained removed from practice, an unfortunate, unnecessary, and professionally inhibiting system that still prevails.

RISE AND FALL OF TEAM NURSING—In the postwar years some nurses became concerned about the definition of nursing as a collection of daily tasks. The patient and family were getting lost in the shuffle of task assignments. Continuity from day to day was missing. Team nursing seemed to be the answer. Every employee's capabilities could be used to the fullest in patient care assignments with a nurse leading the team. This was still "care through others," but i

"Primary nursing is as close as we have come to truly professional practice in an institutional setting."

as a response to unfavorable onditions, both in hospital care nd in society at large in the ostwar era. These problems cluded a shortage of registered urses, the need to control nemployment of unskilled workrs such as aides trained for the ar, and the strain of changing back a peacetime economy.

In its ideal form team nursing to ome extent restored the direction oward a more professional level of ractice. The assignment of staff to e total care of the same patients om day to day gave continuity and omprehensiveness that were lost ith task assignments.

However, the ideal model was aught with problems. The team eader was placed in an often npossible situation, with untrained r poorly trained staff. Frequently e patients were divided accordng to the tasks that had to be done or them. This situation still exists in ospitals today. Data from a 1974 tudy of the quality of nursing care n 111 units in 19 American ospitals indicated that few units ad failed to adopt some characterstics of team nursing. However, sually more of the form than the ubstance was adopted. Typically ne nurse was designated as team eader, but all staff had task ssignments.

Unfortunately, what seemed to nany people to be a good solution o problems 30 years ago freuently has been unsuccessful ecause it has retained so many lements of the functional method. s a result, "team" has come to nean simply a mixed group of ursing staff, one of them called eam leader, who collectively give are to a number of patients, egardless of whether assignments re to tasks or to patients. In some countries projects to begin team nursing are only now under consideration.

Concerned nurses have continued to criticize the shortcomings and regressions in nursing care. Lydia Hall called team nursing

> the greatest disservice to the American public...team nursing... is concerned mainly with getting the nursing work done....Any career that is defined around the work that has to be done, and how it is divided to get it done, is a trade. Thus, the assumption behind team nursing is that it is a trade, at a time when patients not only could profit from professional nursing, but that professional nursing is vital in their achieving rehabilitation through learning.

That is not the way team nursing was intended, but often that is what has happened.

TOWARD PROFESSIONAL PRACTICE—Thoroughly dissatisfied with nursing practice in the modern hospital, Hall said, "As I look at a modern hospital, I realize people no longer go to the hospital for care, and I'm so glad they don't, because they get so little of it when they get there." Her answer to the problem was to institute professional nursing practice.

Each nurse at the Loeb Center, established by Hall in 1963 at the Montefiore Hospital and Medical Center in New York, has responsibility and accountability for her own patients from day to day as long as they are in the Center. The nurse is the provider of care, with autonomy in making decisions and authority in carrying them out. Attendant-messengers provide support services for nurses, not direct care to patients. This model drew from the past when nurses had individual accountability for patients. It is the first major example of appropriate use of the term "professional nursing practice."

However, the Loeb Center model never spread to other institutions. Perhaps the concept of "professional nursing" was already so abused that it had little appeal or challenge for most nurses, or perhaps the model was simply misunderstood, feared, or resented. Whatever the reason it was not replicated, it did serve to challenge the ideas of many nurses about the quality of nursing care and the future of the nursing profession.

At about the same time "primary nursing" made its debut. Although primary nursing was based on the principles of professional practice as applied at the Loeb Center, it was regarded by many nurses as a new concept. It added the dimension of 24-hour accountability of one nurse and offered a solution for fragmented, task-centered care, for dissatisfaction with nursing, and for the depersonalization of the hospital. It was an ideal that attracted many nurses.

Nurses in several countries have reported projects to implement primary nursing. The reasons for change have been similar: dissatisfaction with the quality of nursing care and the problems associated with a less than desirable level of quality—high staff turnover, patient complaints, physician dissatisfaction, and lack of professional challenge to nurses.

Although the projects are similar in concept, they reveal some questions and variations in how primary nursing is implemented. Review and discussion of experiences in various sites will compare the process with the conceptual definition of primary nursing.

Discussions of primary nursing

"The nature of nursing practice has evolve as times have changed. How far along the scale o professionalization we progress depends on th willingness of nurses to keep evolving.

often contrast it with task-centered (functional) and team nursing. But these three labels are not totally exclusive and do not cover the range of possible types of nursing care organization. Just as team nursing became mixed with task assignments, the advent of primary nursing has produced some hybrids. One combination, called modular nursing, is an outgrowth of team nursing in the direction of primary nursing. This method attempts to employ concepts of primary nursing while still using mixed categories of staff.

In the modular design each patient has a primary nurse who is a registered nurse. She is responsible for directing the patient's nursing care from admission through discharge. Because of limited qualifications and capabilities of some staff members, the staff works in groups (teams) to provide care to a small group or module of patients. Each staff member takes a patient assignment within the module. If some staff members, such as aides, students, practical nurses, or even some registered nurses, cannot take a full patient assignment, a professional nurse must supplement. Modular nursing, then, is a pragmatic mixture of team and primary nursing. The module still could be called a "team," but a new word gives new images and expectations.

"Total patient care" and "patient assignment" are sometimes confused with primary nursing. The difference lies in the continuity and accountability from day to day, as well as coordination around the clock. Both total patient care and patient assignment are specified for a shift, not for 24-hour responsibility and accountability. No one nurse directs the nursing care of each patient, and patient assignments usually change from day to day. Furthermore, mixed categories of staff are frequently present, so that many staff members are unqualified professionally and legally to provide all the nursing care a patient requires.

Another point of confusion with primary nursing is the all registered nurse staff. The categories of staff alone do not determine the presence of primary nursing. A unit with all registered nurses still could use the task method of assignment. Or the nurses could spend considerable time doing the work of other departments or personnel and thus not engage directly in nursing care. Registered nurses are necessary for professional practice, but their mere presence is not a sufficient condition for primary nursing or professional practice.

Nursing care organization has taken many forms over the past century. These forms are not totally different from the professional model; on the basis of the concepts that define "professional," they signify the evolution of nursing practice toward the professional model.

SCALE OF PROFESSIONALIZATION

Task assignments (functional)	Team nursing	Patient assignments; total care	Modular nursing	Primary nursing	Professiona nursing by every nurs

The figure above shows the points in the continuum of professionalization. Note that primary nursing is not the end point. As already described, nursing has not yet realized a high level of professiona practice, although primary nursin approaches it most closely in hospital nursing.

This view does not mean th anything not called primary nursin or professional practice is bad. Th nature of nursing practice ha evolved as times have change How far along the scale of professionalization we progress depend on the willingness of nurses to kee evolving. ⓤ

An excerpt from

Sins of Commission

novel by Harold L. Klawans, M.D.
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About the Author

Although medical center staffs nnually make thousands of contributions to the scientific literature, few octors ever undertake the writing of fiction. To commemorate one such bold—and successful—departure from the scientific genre, we reprint chapter from Dr. Harold L. Klawans' recently-released novel, *Sins of Commission*, a "medical detective tory" which will be offered also as an alternate selection of the Book-of-the-Month Club for June, 1982.

Rush neurologist Dr. Klawans is an ternational authority on parkinsonism and neurological disorders generally. He is associate chairman of the epartment of Neurological Sciences, and professor of neurology and pharmacology at Rush Medical College. He is likewise a prolific writer and ditor. His *Textbook of Clinical Neuroharmacology*, written with William J. Weiner, M.D., was published by aven Press in 1981, and *The Medicine of History*, a book of thirteen original essays, is scheduled for Raven's list early this year. He was associate editor of the *Handbook of Clinical eurology*, a 42-volume encyclopedia, and his papers on neurology and neuropharmacology run well into the hundreds. This year he will serve as editor-in-chief of a new periodical, the "Journal of Clinical Neuropharmacology."

[In this excerpt, Dr. Paul Richardson muses about the three mysterious deaths from seizures which have occurred at Austin Flint Medical Center, while he conducts Teaching Rounds for his students.]

Rounds started in the conference room on 7 East. The four students and the two residents were waiting when Richardson and Westphal arrived. John Adson had seen Mr. Romberg in the morning. John had taken his history and examined him. He had then reviewed Mr. Romberg's entire record and Dr. Batten had gone over everything with him. Richardson sat at the head of the conference table while Westphal sat on one side between Donna Batten and Al Schilder, facing the four students. Richardson hoped this formal division into classes would disappear as they got into the quarter. He sat back and took out a small cigar as John began to tell Mr. Romberg's story. One thing about fourth year students was that they had done this often enough to know the ritual—the codified formula: age, race, sex, complaint.

"Mr. Perry Romberg is a forty-seven-year-old white male who was in good health until five years ago when he first noticed a tremor of his right hand." As John went on giving a detailed synopsis of the history, Richardson listened with only one ear. What Richardson liked best about these standard formal presentations was that he could follow the logic and still think about other things. He was sure he had met John before. That was it. Last year's departmental party. John had come with Renee. Richardson had been favorably impressed by him. They'd talked about the variety of

career opportunities medicine offered. John wasn't interested in specializing. Like many of his contemporaries, John was really going to go out and deliver medical care. All but a handful of Richardson's medical school classmates had shunned general practice in favor of specialty training. Maybe John's class would do more good than his had. John was sure he just wanted to go into family practice—out west somewhere—and "do his own thing." Richardson wasn't sure he knew what John's "thing" was, but maybe John didn't know yet either. Who did at age twenty-six?

Despite his musing Richardson still managed to catch the salient points. Mr. Romberg apparently had had parkinsonism for five years and had been on L-dopa for four years. He must be wrong about the seizures. There must be some other explanation. Things like that didn't happen. Nobody in his right mind would kill people in that way. There must be some other explanation. Some sort of encephalitis. The only unusual feature was that Mr. Romberg had never improved as a result of getting L-dopa. In fact, despite rather high doses of L-dopa, his parkinsonism had continued to progress so that now he was almost bedridden. There were many reasons why a patient might not improve on L-dopa. Richardson wondered if John or Donna had asked Mr. Romberg about all of them.

When John finished his presentation, Richardson suggested that before they discuss the problem of L-dopa resistant parkinsonism, they should examine Mr. Romberg. After all, if he didn't have parkinsonism the failure of L-dopa required no explanation. They all followed John and Richardson into Mr. Romberg's room and John introduced Dr. Richardson. Like many patients, Mr. Romberg was both embarrassed by the large crowd and at the same time flattered by all the attention he was receiving. At times, Richardson felt a bit guilty about his entourage. However, he obtained some consolation in his belief that the patients also profited by this system. The students and residents had more time to be completely thorough, and often, in going over the same story again and again, patients would recall important details they had forgotten. Of course, no system was perfect and it didn't always work out that way. Richardson began with his usual opening. "Dr. Adson and Dr. Batten and I have been going over your history, so you won't have to go over everything again, but I will have to ask you some questions and hear your answers myself."

Over the next five minutes he carefully dissected the history and was able to confirm the story he had already heard. Mr. Romberg had had Parkinson's disease for five years. He had been on L-dopa for four years. He took his medicine regularly and was still taking it. He was on a high dose and yet felt that it had never helped. He denied taking other medications. Next, Richardson examined him and demonstrated the key physical findings to the group. Mr. Romberg had a mild tremor of the fingers as his hands rested in his lap. The tremor had all the characteristics of a parkinsonian pill-rolling tremor. Stiffness was present in Mr. Romberg's arms and legs. His face was frozen and almost expressionless. When Richardson finished the examination he told the patient that he agreed with the diagnosis of Parkinson's disease. He then sai he would confer with Mr. Romberg doctor and order some tests to se how they might help him get bette

As they walked back to the conference room, Richardson shoo his head and remarked to Donna "If Romberg's history is true then he is virtually unique in m experience."

When they got back to the conference room, the students an residents sat around the table whil Richardson stood at the blackboar He turned to Sue and aske "What's the diagnosis?"

"Parkinson's."

"Why?"

"He looks like he has Parkinson disease," Sue answered.

"In what way? Try to be mor specific."

"The tremor and stiffness are th most obvious features," she replie

"Anything else?"

"His face."

"Anything else?"

When none of the student answered, Dr. Richardson move up the ladder. "Donna?"

"His voice."

"What about it?" Richardson wa warming up to his subject.

"It was soft and monotonous."

"Right. Now you students shou all see him every day and talk him and memorize that voice, i slow...halting...na...ture...with un . . . natural . . . stops . . . and . spaces...mixed with sudde rushes. Combine this loss of contr with a monotonous pitch and yo have parkinsonism. When you se him, study his face. He can move but still it is frozen without th moment-to-moment play of em tions you usually see. And his ey never seem to blink. He stares li a reptile. Learn that voice and th physiognomy so that you w cognize parkinsonism in the ture. Walt, what goes wrong in e brain in Parkinson's disease?"

"There is no dopamine."

"Why, Al?"

"The cells that make dopamine e not working right, so they don't ake enough dopamine."

"Good. Now if the problem is lack dopamine, why don't we just give e patients dopamine, Linda?"

"I'm not sure."

"Guess."

"I don't think dopamine can get to the brain."

"True, dopamine cannot cross the ood-brain barrier, so we give dopa which can cross into the ain. The brain makes dopamine ıt of the L-dopa and the patient ets better. Right, John?"

"Right."

"Wrong. Mr. Romberg didn't get etter. Why? Let's think about it for while. What are the reasons for ilure of L-dopa. Start very basic, onna."

"Wrong diagnosis."

"Correct. If a patient doesn't have arkinson's, L-dopa won't help. But r. Romberg has Parkinson's. nother reason, Al?"

"Noncompliance."

"Meaning?"

"Maybe he just doesn't take his edicine."

"He seems like a reliable guy, but ou're right. You never know. atients often don't take their edicine and then lie about it." ichardson wrote on the board:

NONCOMPLIANCE

"How can we prove whether he as been taking his medication? ue?"

Silence. It was time to move up the residents.

"Donna?"

"Do a spinal tap and see if there is evidence that he is taking L-dopa and if it is getting into his brain."

"Does everybody understand that?"

Several of the students shook their heads.

"Donna, would you explain that?"

"If Mr. Romberg takes his L-dopa and it gets into his brain, then traces of the L-dopa will be present in the spinal fluid that bathes his brain. If we do a spinal tap and take a sample of this fluid and send it to the neurology lab, they can see if there are any traces of L-dopa in the fluid."

"What other causes for failure are there, John?"

"Taking certain vitamins that block the effect of L-dopa."

"Do you know which vitamins?"

"Vitamin B_6," John answered.

"Does Mr. Romberg take vitamins?" As he asked this, Richardson wrote:

2. VITAMIN B_6

"No."

"Are we sure?"

"I asked him. Dr. Batten asked him. His doctor warned him not to take vitamins."

"Okay, any other causes? Anyone?"

"Sure, boss," said Herb Westphal. "Taking medicines that block that action of dopamine such as phenothiazines, like Thorazine."

3. PHENOTHIAZINES

"Anything else, Donna?"

"Thyroid disease."

"Mr. Romberg seems to be a good candidate for this."

4. THYROID DISEASE

"You didn't mention his thyroid surgery."

"How did you..." Donna stopped. "You saw the scar, of course."

"Of course."

"He is on thyroid replacement," said John.

"Is his replacement adequate?"

"I think so."

"And he denied taking Vitamin B_6 or phenothiazines. This is getting more interesting. If we can prove he is telling the truth, then the chase will be on." Richardson looked at the list on the board and wrote the appropriate test opposite each entry.

1. NONCOMPLIANCE—do lumbar puncture
2. VITAMIN B_6—do lumbar puncture
3. PHENOTHIAZINES—do phenothiazine levels
4. THYROID DISEASE—do thyroid evaluation

"Donna, make sure the appropriate tests get ordered."

They walked down one flight and across the building to 6 West. Walt Simpson got Miss Wolman's chart and started his presentation. As usual he was too serious. Richardson had known Walt for three years and wondered if he ever just relaxed and enjoyed himself. The story was short and simple. Age, race, sex, complaint. In some ways Walt reminded Richardson of himself when he was a medical student. He'd had the same need to do more than just become another doctor. The same arrogance. Was it really arrogance or just a mistaken feeling of self-importance, that what he was going to do with his life was more important than just being a doctor? Had he really felt that way? Sometimes it was hard to remember your own feelings. He didn't want to believe that he was driven by a need to do great things. It was more a need not to be bored. Richardson had enough friends who thought they were going to win Nobel prizes. They weren't all lean and hungry, but in many ways they were just as dangerous. Of course, a trip to Stockholm would be nice.

From the history it seemed clear that Miss Wolman's left-sided paralysis and double vision were psychiatric in origin and not neurological. Richardson's examination confirmed this impression that there was no evidence at all of neurologic disease. As he was writing out his consult and recommending that she be seen by a psychiatrist, he heard an emergency page for the neurology resident on call. Both Schilder and Westphal got up to answer the page.

"If it's another seizure, don't give the patient anything."

"You mean just watch the patient die?" asked Herb. "That's hard to do."

"I know it is." Richardson paused. "I guess it won't make much difference. Do whatever you think is best."

Dr. Sanders was on the same floor. Sue went out to the nursing station, got the chart, returned to the conference room, gave the chart to Dr. Richardson, and started her presentation.

Sue seemed a bit nervous as she began. A bit tentative. Was she always so unsure of herself? She shouldn't be. But she had been through plenty. The wrong diagnosis can do a lot of harm.

"Dr. Sanders is a forty-six-year-old white male..."

He is two years older than I am, Richardson thought to himself. He'd never realized that before.

"...who was in his usual state of health until two days prior to admission."

"When was that?"

"A little over a week ago. At that time," she continued, "he began running a temperature and coughing."

"Did he take chicken soup?"

"No, he just went home and went to bed."

"With anyone we know?"

"I didn't ask," she responded angrily.

"Sorry, I didn't mean to embarrass you. Go ahead and I'll keep my mouth shut." He had only been trying to relax the atmosphere a bit, get her to loosen up a little. He tried hard never to embarrass a student. He always remembered to call them doctors in front of their patients. He'd have to be more careful in the future.

As Sue told the story it seemed to be a straightforward case of acute bacterial pneumonia. Sanders had been admitted one week ago and had been placed on intravenous antibiotics. Although he was fairly sick for a couple of days, he had improved remarkably toward the end of last week. Over the last two days, when his doctors were about to stop the intravenous antibiotics, Sanders had complained of slurred speech and trouble swallowing. Sanders felt that his swallowing was worse today. Sue had been on Infectious Disease last week when Sanders had been admitted, and she said that they all felt it was a simple pneumonia and were surprised by his swallowing difficulty.

The crew gathered around Sanders's bed while Richardson examined him. He carefully tested Sanders's swallowing and concluded that there was a definite weakness of the tongue and throat muscles. There appeared to be some weakness of Sanders's arms and legs as well, but this was minimal.

"Did they do a myasthenia gravi
test?"

"Yes," Sanders replied. Then
looking straight at Sue Evans, h
continued, "In fact, this beautifu
young thing did it all herself
Unfortunately, we were not alone.

"You sound like you're feelin
pretty much back to normal."

"If it weren't for this swallowin
I'd be okay. What do you think it i
Paul?"

"I'm not sure, but we're goin
to start with a spinal tap to mak
sure you haven't got low-grad
meningitis."

"If that's what you have to do, d
it." As Richardson turned to leave
Sanders tapped him on the arm an
said, "Give my love to Bobbie."

That was one message Richar
son would not relay. They went bac
to the conference room an
Richardson began to write th
differential diagnosis on th
blackboard.

1. MYASTHENIA GRAVIS

"What's against this diagnosi
Sue?"

"The negative Tensilon test."

"You're right. The weakness
the myasthenia is virtually alwa
overcome by Tensilon for a minu
or two. If the patient has troub
with his eyes or with swallowin
within two or three minutes aft
Tensilon the improvement
obvious. Tensilon tests are n
always positive, but almost alway

2. MENINGITIS

"How do we prove whether
not he has meningitis?"

"Do a spinal tap," said John.

"That's what we'll start with. Bu
it's meningitis, he shouldn't ha
weakness of his arms and legs."

"Could that weakness be th
result of being sick and in bed fo
week?"

Richardson shook his head, but is reply was interrupted by the eturn of Herb Westphal, followed y Al Schilder.

"It happened again, Chief."

"What?"

"Another of those damn fits."

Schilder shook his head back and orth. "I've never seen anything like before. I thought the patient was wake and then he was dead. Jesus hrist!"

Westphal also seemed perlexed. "The goddamned Valium idn't touch him."

Schilder continued to shake his ead. "His face looked . . ."

"Hold it. One at a time. Let's start t the beginning, go through the niddle and get to the end. Herb, ell me what you saw."

"We got to him not long after it tarted. He was just down the orridor, and when we got there he vas lying in bed and his face was tiff and contorted. But he was wake and looking around."

"Are you sure he was awake? hose weren't just roving eye novements?"

"No, he would look at you. He ouldn't move his face or turn his neck. But he could move his eyes, nd he looked right at me. He ouldn't change his expression, but lamn it, you could see that he was rightened."

"Then what happened?"

"Someone slammed the door and ne had a fit. His neck and legs stiffened and went back, the rest of nis body was just lifted off the bed, nd he stopped breathing. Al got here then with the Valium. I don't know how he got it so fast. He must nave an in with the nurses. We gave nim 10 milligrams intravenously and nothing happened, so we gave him 10 milligrams more."

"Wait a minute. Did he stop breathing before you gave him the Valium?"

"Yes, I'm sure. It wasn't the Valium."

Schilder confirmed the chief resident's version. "No question about it. It wasn't a real respiratory arrest. It was as if his diaphragm and all the rest of his respiratory muscles were in a spasm. And, damn it, he was still looking at us."

"We gave him 10 milligrams more and then he quit looking at us."

Then Schilder added, "His face didn't change. It didn't relax, but he looked different. The fear was gone."

"Didn't you try to resuscitate him, Al?"

"We couldn't do mouth-to-mouth because of the spasms."

"He had terminal cancer, so no one wanted to get too vigorous," Adams added.

"A most peculiar story."

"It's just like the other three, Boss."

"That is what makes it peculiar."

The conference room was crowded. Not only the neurology service had gathered around to hear the story, but also the nursing staff and the rest of the house staff on the floor. Richardson looked at everyone. He tried to reassure them that what had happened was not anyone's fault. He had to be absolutely sure before he made any public accusations. They reviewed the appropriate management of acute seizures and then Richardson called a halt to the session.

"Herb, come back to the office with me. The rest of you can see your other patients."

When they got back to the office, he told Chris to call Dean Willis and say that he had to see him that afternoon.

"What should I say when his secretary asks what you want to see him about?"

"That it's a matter of life and death."

"That won't work. Everything is a crisis around here."

"Tell her someone is running around the hospital killing patients."

"You're kidding."

"I wish I were."

The two physicians went into Richardson's office. Herb closed the door and saw that Richardson was looking through the pharmacology books in his bookcase. Herb never knew how Richardson found anything in that office except for the various-sized metal boxes of Dutch cigars, all with green price tags in guilders. Herb found the box he was looking for before Richardson found the book he wanted. Herb took a cigar, a Panatela, and sat down to light it. Richardson was looking through a large German text on pharmacology and translated aloud to himself as much as to Herb.

"*Nux vomica*, the seeds of a tree native to India, the *strychnos nux vomica*. The principal active ingredient is strychnine. The term *nux vomica* has nothing to do with vomiting. *Vomica* refers to the cavity that is a feature of the seed. The cavity is attributed to the imprint of the finger of the Creator. We always seem to blame everything on God. Strychnine produces excitement of all portions of the central nervous system, including the brain and the spinal cord. It is a powerful convulsant and—here's what I'm looking for—the convulsions have a characteristic motor pattern. The movements of the seizure consist of symmetrical thrusts, which may be brought about by any sudden stimulus."

"Even noise?"

Paul continued, "including sounds, touch, light. It doesn't mention the sudden slamming of a door, but I'm sure that would be more than sufficient. The patients finally develop full-blown convulsions in which the body is arched in severe hyperextension so that only the top of the head and heels of the patient are touching the bed. At this time there is no respiration because of the severe spasm of the respiratory muscles. Death results from failure of lower brain centers due to the impaired respiration."

"Sounds like our patients."

"The bastard. Listen. The muscle spasms are excruciatingly painful, but the sufferer is awake until the very end. He is usually extremely apprehensive—what an understatement!—and fearful of impending death as he awaits each successive seizure."

"There are a lot of nicer ways to die," Herb commented.

"And to kill people."

Richardson rummaged around his desk, found a box of miniature cigars, and lit one. He looked at the ashtray and pondered a bit. He wondered to himself whether Sherlock Holmes could have determined the shape and size of different cigars made with the same tobacco just by looking at the ashes. "Herb, tell me everything you can about the cases."

"The first one I know about was the night before last around 8:30 or so, just after visiting hours were over. The patient was a Mrs. Schiff, the wife of Rabbi Morris Schiff, an orthodox rabbi. As far as I can tell, she wasn't doing too well. She came in for evaluation for weight loss and loss of energy. The workup had shown metastatic disease with cancer involving the lungs, liver, and hip."

"Any neurologic problem?"

"The initial examination was described as WNL."

This was the usual shorthand for "within normal limits." But no one really did a complete neurologic examination on a patient without neurologic complaints, so Richardson usually interpreted it as "we never looked." Richardson thought for a minute and then asked Herb, "Did she have any neurologic problems?"

"No."

"Are you sure?"

"Pretty sure. No neurologic complaints were recorded in the chart."

"Metastases to the brain could have caused her seizures."

"Yeah. I talked to the rabbi at great length. I'm sure there was no reason to suspect brain metastases."

"They could still have been there."

"The CT scan was normal."

Richardson shook his head. Sometimes he still could not get used to the progress. She'd even had a CT scan—computerized tomography. Such a simple procedure and one of the truly great advancements in medicine. All the patient did was rest with his head in a rotating machine, receive the same amount of radiation as he would for a series of skull X-rays and you get a picture of the brain. An outline of the brain and its cavities which showed most tumors, most blood clots, most strokes. No more pneumoencephalograms. Mrs. Schiff had been lucky. She got a CT scan to make sure there was no cancer in her brain. A few years earlier she would have gotten a pneumoencephalogram. First, they would have done a spinal tap, taken out 10 ccs of spinal fluid and put in 10 ccs of air, then 10 more, then another, to up to 50 or 60 ccs. Thank God they didn't have to do pneumos anymore. Everybody got sick from them. Fever. Headache. Those guys who invented the CT scan certainly deserved their Nobel Prize. Just ask anybody who had ever had a pneumo.

"That helps. So what happened?" Richardson asked.

"The rabbi went home, and about half an hour later the nurse heard a noise and went into the room."

"Did the roommate notice anything?"

"She was in a single room. They were thinking about getting a private duty nurse but decided she didn't need one. They had just done a simple node biopsy earlier in the day for tissue diagnosis, and she was feeling okay. I talked to the nurse. You know her, Melkerson."

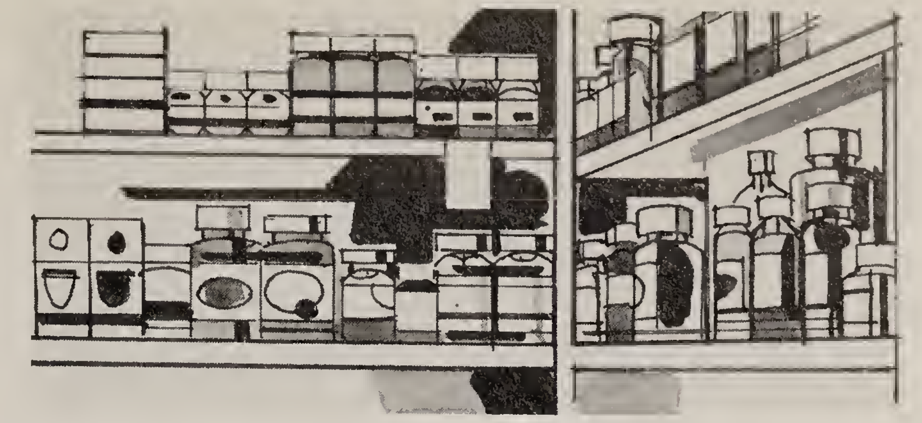
"She's good."

"She got there and the patien was being lifted off her bed by a severe seizure. She called the intern and they paged me. They didn't have any Valium on the floo so they gave her IV phenobarb When I got there, they had give her 240 milligrams and she was sti in a severe spasm with her fac frozen and contorted, but she wasn awake or breathing. And she died

"Did they try to resuscitate her?

"No, she had terminal disease There didn't seem to be any reaso Why resuscitate someone wit metastatic disease who's going t die soon anyway?" Herb asked.

Why *kill* someone with meta static disease who was going to di soon anyway? Paul wondered. H didn't ask Herb, but he doubted Herb had an answer either. Th second death had occurred o Sunday morning at about 10:3 The patient's name had bee Mitchell, a black man in his sixtie who had a known brain tumor th had been operated on a year or s earlier, and he was not doing we "What do you mean, 'not doin



ll'?" Richardson asked.

He was going down the tubes."

Any previous seizures?"

No."

Again Herb had gotten there ortly after the nurse had discov- ed the seizure. The seizure unded just like Mrs. Schiff's. They d given him Valium, but Mitchell d gone into a spasm, quit eathing, and died, and there was reason at all even to attempt to uscitate this old man—an old an without relatives, without pe. No reason to try to extend life and suffering. But was there y reason to shorten it? Every ce in a while a hospital would ve an epidemic of sudden deaths terminal patients. A plague of ercy killings? Could that be ppening here? Right under eir noses?

Was he awake when you got ere?"

Yes, and it was just like the ers."

Richardson didn't even pay much ention to the rest of Herb's narra- e. It was the same thing over and er again. There must be some asonable explanation. Herb again d him about Roberta Todd, who d just died that morning. She'd en fifty-four years old and had d a metastatic tumor. No known ain involvement. She had just en given some pain medication d was sleeping. Her roommate d a visitor, and they went into the unge to leave Mrs. Todd undis- bed. When they came back the tient was having seizures. From ere on it was just like the others. ozen face, tetanic seizure, spiratory spasm, death. Why kill ople who were already dying? ost mercy killers picked patients o were dying more slowly or ffering more.

Today's patient, named Henry Erb, was another patient with known carcinoma—a seventy-year-old male with bladder cancer who had just returned to his room from recovery and was sleeping quietly. The nurse was checking him every fifteen minutes. When she went back in he was seizing.

"Will we get an autopsy?"

"Unlikely."

"Go down and draw some blood on him."

"What?"

"Just do what I asked. Get me 20 ccs and freeze it in the lab, and don't let anyone know what you're doing."

"That's not legal."

"What?"

"It's not legal to draw blood from a dead patient without a permit."

"It's not legal to kill people either. Just get that damn blood and take it to the lab. Spin it down and freeze it. Get going. You're not exactly stealing his precious bodily fluids."

As Herb was about to leave, he suddenly turned to Richardson and said, "It couldn't be strychnine."

"Why not?"

"I've used that in the lab. We all have, and we've used Valium and phenobarb or even Dilantin to stop the convulsions. But none of them worked in these cases. They didn't make any difference at all."

"They only help if you give the animals small doses of strychnine," Richardson explained. "In the lab you're trying to produce seizures you can treat and study. You're not trying to kill the guinea pigs. You use about one tenth of the average lethal dose or even less. But if you give enough strychnine, nothing helps. The dose used here was much greater than the lethal dose, so the other drugs wouldn't do a damn thing. Now get out of here and get that blood."

He buzzed Chris on the intercom. Dean Willis would be able to see him now for a few minutes. He told her to call and tell Willis that he was on his way. He crossed the street to the new medical school building and took the elevator to the tenth floor. For once he didn't have to wait for half an hour. The meeting with Dean Willis was like all of Richardson's previous meetings with him: cordial, short, and nonproductive. The two of them rarely saw things in the same light. As important as Richardson might be in the medical center, he would never be a member of the dean's inner circle of advisors who really ran things.

When Paul entered the office Dean Willis was looking at the one sheet of typed paper which rested on his desk directly in front of him. He motioned Richardson to sit down and continued reading. As he read there was a slight smile on his face. Or was it a frown? Richardson couldn't be sure. But it probably didn't matter. The dean's smiles were as studied as his frowns, and as calculated. The only spontaneous act Richardson had ever observed in him had been a sneeze. Finally Willis finished reading, looked up, and immediately took charge. "I hope you're here about something worthwhile. I've a very busy schedule today. I just finished with the Student Grievance Committee and in twenty minutes I have to meet with some people who are interested in helping our building program."

"Since we're supposed to preserve lives, I think this is worthwhile."

"Well, what is it this time?"

"There have been four deaths in the hospital over the last three days," Richardson began.

"Actually, there were eight deaths over the weekend. That's about average for a weekend. Nothing unusual. People die in hospitals."

"Die, yes. Get murdered, no."

"Murdered?"

"Yes, murdered."

"You must be wrong. Nobody murders patients."

"I wish I were. But I'm pretty sure I know what happened. Four patients had peculiar seizures that killed them, and I'm sure the seizures were due to strychnine."

"Strychnine?" The smile or frown which had been frozen on the dean's face was now entirely gone.

"That's right. Somebody gave strychnine to four patients, and they all died."

The dean's attitude changed. He shook his head in disbelief. "Are you sure, Paul?"

"Ninety-nine percent." Richardson told him everything he had learned from Westphal. As the story dragged on, Dean Willis got a bit fidgety. He looked at his watch. It was time for his meeting.

"Can you prove these four patients were actually murdered?"

"Prove?"

"Yes, prove. In a court of law you need proof, not conjecture. After all, maybe we're experiencing some sort of epidemic of a weird form of encephalitis or something. We all know you're fond of brilliant, obscure diagnoses. Sometimes you've been wrong, and you might be wrong now. After all, you are fond of zebras."

"Zebras?" Paul responded.

"Yes, zebras. If you were in a room with ten other physicians and you all heard hoofbeats, ten doctors would identify those hoofbeats as belonging to a horse and you'd wonder why it couldn't have been a zebra."

"Okay, I like exotic diagnoses," Richardson admitted. "But there's a lot at stake here."

"There sure is. We've got 940 patients in the hospital who would be panic-stricken by this story of yours, not to mention more than 4,000 employees and over 800 physicians. Hell, there are three physicians who are also patients right now. We can't make wild accusations. Too many people could be hurt. There's too much at stake. I'll need some proof before I do anything."

"Proof? It may be too late by the time we can be 100 percent sure. We need the police in on this. Let them collect the proof. That's what their job is. Call them. The least they can do is make it harder for the murderer to kill someone else."

"Someone else?"

"Sure, how do we know he'll stop with four?"

"You're getting carried away, Paul. We're not even positive that there have been any murders."

Paul Richardson stopped for a minute. Was he absolutely sure? Could it be something else? A viral infection of some sort? Maybe. He'd be more sure after they studied the blood Herb had gotten from the last patient. His voice became calmer, less demanding, almost pleading. "We can't just do nothing."

"I am not going to call in the police until I have some more evidence."

"More—"

"It wouldn't be good for our patients or for us, and we can't afford that kind of publicity right now. We're in the middle of a big fund-raising campaign."

Now he was pleading. "We have to do something."

"We will. Prepare a confidential memo with all the details. Then give me a copy and give one to Collier."

"Collier?"

"Yes. As head of pathology th
comes under his jurisdiction, ar
they are doing an autopsy on or
of the patients."

"Then what?"

"I'll go over it with him, and if h
agrees, I'll call in the police."

"That may take days."

"That's what we're going to d
Don't talk about this to anyone, ar
make sure Ms. Gowers doesr
either."

"Ms. Gowers?" Richardsc
frowned. "Oh, Chris."

Richardson walked back to h
office slowly. Some day he hope
he would have a meeting with Wil
that wouldn't leave him with a ba
taste in his mouth.

As far as Richardson was co
cerned, the career of Thomas Wil
verified the Peter Principle. If Wil
lived long enough he could end u
a President of the United States.

Willis was originally brought
Austin Flint to be head of the Ren
Division when Richardson was a
intern. The house staff had hate
him. In their view, he near
destroyed Renal singlehanded
The teaching went to hell. Patie
care became more mechanical, le
personal. The night call schedu
increased. But somehow, ar
Richardson never really understoo
this, the number of patien
increased. The interns and res
dents weren't concerned with th
percentage of hospital beds fille
each day—the administration wa

Willis prospered, and of cours
so did the Renal Division, especial
when Willis's skills as a fund raise
improved. A few years later whe
the Department of Medicin
needed a new chairman, he wa
the only one who could do the jo
And Willis did the job well. Th
average daily census of bed occ
pancy went up. Income increase
and donations grew. The researc

ndowment tripled in less than two ears. Teaching? Who cared? No ne—until it got harder to recruit ew interns. The solution? Put Willis the dean's office where he could aise money and play politics to his eart's content. As luck would have , the only open position was Dean f Student Affairs, a traditionally uiet job. Willis would have plenty f time to do what he did best. But mes had changed. Being Dean of tudent Affairs in the early eventies was not a vacation. It was robably the most sensitive job in e whole medical center. There ere five exciting years filled with tudent strikes, boycotts, and faclty unrest, all, it seemed to Paul, ggravated by Willis's failure to deal onestly with the students. But he ventually solved those problems y his clever machinations and was amed Dean of the Medical School.

Through it all the medical school urvived and in some ways even rospered. The endowment had rown. That meant more support r research and even for teaching. only the means to that end had een more palatable.

Maybe Willis was right. Maybe it ould be something else. Some ddball infection. After all, new ugs and new diseases did crop up very once in a while. Look at egionnaire's disease. One day it idn't exist, the next day it was epidemic.

When he got back to his office, ichardson called Renee Weber in e lab and told her to get twelve uinea pigs. He'd be over in twenty inutes to supervise an experient. They'd use the serum that erb had brought over and left for m.

By the time he arrived at the boratory, Renee had put two uinea pigs in each of six cages. ach guinea pig weighed about half

a pound. They were between eight and twelve weeks old. Pure white, an inbred albino strain. Being albinos, their eyes reflected light as bright red dots, just like the pictures from Kodak Instamatics before they put on the flash extenders. Bright red dots in the middle of each eye. They gave half a milliliter of the serum to each animal in the first cage. Almost immediately each animal threw its head back, extended all four legs in a severe tetanic convulsion, and expired.

"Wow, that was impressive!" Renee exclaimed.

"Page Herb and have him bring some Valium and phenobarbital up here." To Richardson it was more than impressive. No simple infection could do that. It had to be a poison. Not a new form of Legionnaire's disease.

While they waited, Richardson calculated the highest dose of Valium and phenobarbital they could give the guinea pigs without killing them. "How much serum do we have left?"

"Eighteen ccs."

"How many guinea pigs?"

"Ten."

Is the camera around?"

"Yes."

"Set it up to take pictures of the animals. We may have to show them to Willis."

"Why Willis?" Renee asked.

Richardson didn't answer that question. He was about to make up a reply when the phone rang. It was Dr. Westphal. Renee told him that Dr. Richardson wanted him to come up to the laboratory and to bring some Valium and phenobarbital. "He said he'd be up here in ten minutes," she repeated to Richardson.

Richardson didn't reply. He got up and walked to the window. The lab was on the sixth floor. Aside from the few people walking to and fro between the hospital and the parking garage, the streets were almost empty. No one used the streets anymore. No one just went for a walk. No more street vendors. Today most of the people who seemed to use the city streets were prostitutes and drug pushers. The

"L" trains seemed very far away. In the depths of the Depression, his father had had an office overlooking the "L" tracks. Now Paul had an office overlooking the "L" and his office was in an even worse neighborhood. That's what was called upward mobility?

He looked at his watch. Herb would be there soon. Herb had seen all four patients die. Maybe it could be something else. What if this new virus or bacteria made a toxin which built up inside the body like tetanus or diphtheria? That seemed more farfetched than a zebra. But it was possible. Maybe it wasn't murder. Maybe Willis was right. He'd have to be absolutely sure before he made this diagnosis. After all, why murder people who were already dying? It just didn't make any sense. And why use strychnine? Sure, there was plenty of it around the medical center. In his lab. In Physiology. In the Pharmacology labs. He looked through the cabinet where they kept the medicines and couldn't find any strychnine. "Renee, where is the strychnine?"

"In the cabinet, I suppose."

"It's not here. When did you last see it?"

"We haven't used it in months. I don't remember when I saw it last."

This is crazy, Richardson thought to himself. Nobody in my department would steal strychnine to kill people. We've got better poisons than that. We've got tetrodotoxin, cyanide. Anybody who really knew neurology wouldn't use strychnine. He gazed out the window, but his mood was interrupted by the arrival of Herb Westphal. Richardson told Herb how much medication to give the guinea pigs.

"That's enough to kill them."

"Not quite, but almost."

They gave nothing to the animals in the first cage, Valium to those in the second, phenobarbital to those in the third, and both Valium and phenobarbital to those in the fourth cage. They then gave half a cc of serum to each guinea pig. Within seconds each and every guinea pig had a tetanic convulsion and died. They pretreated the last two animals with phenobarbital one half hour before they injected the serum to see if giving the guinea pigs time to build up their brain levels of phenobarbital would help. It didn't.

Herb shook his head. "Just like the patients."

"It answers your question."

"What question?"

"Why didn't the Valium or anything else help? The dose was just too damn high. Now that I've answered your question, you can answer mine."

"What's that, Chief?"

"Why kill these particular patients?"

"Who knows?"

"Renee, how long will it take to get the film developed?"

"Two weeks."

"Shit! Can't we get it done faster than that?"

"If I slip the guy in photography five bucks, we can get it in two days."

"Get it there first thing in the morning. Give him ten bucks and tell him we need it in twenty-four hours."

"Do I take the ten bucks off the grant?"

Richardson reached into his pocket, pulled out his wallet, and gave Renee $10. "No, I'll pay for it, but do it first thing in the morning."

"Okay."

"Then I want you to nose around Physiology and Pharmacology and see if they have any strychnine. Tell them you want to borrow some. We need it for an experiment and our ran out."

"Sure."

"And more important, find ou whether any might be missing fro their labs. And, Herb..."

"Yeah."

"Call the pharmacy and see wh else might have strychnine, le Renee know, and then she'll borro some from anybody else who has i

"Okay, Chief."

"Do it first thing in the morning. we're lucky, by the time we hav the movies back we'll know som more." Richardson paused and the in a quiet, determined manner wer on. "I may not be absolutely sure But I'm pretty damn close to tha Herb, I'm going to write u everything you told me about th patients as well as the results c these experiments. It ought to mak one heck of a memo. That plus ou movies ought to be enough t convince Dean Willis that some thing has got to be done."

Dean Willis didn't have to wait t see the movies. He called the polic late that same night, shortly afte Dr. Collier, who was in the hospita for elective surgery, died after brief series of seizures. The chas was on.

High Technology and Human Value

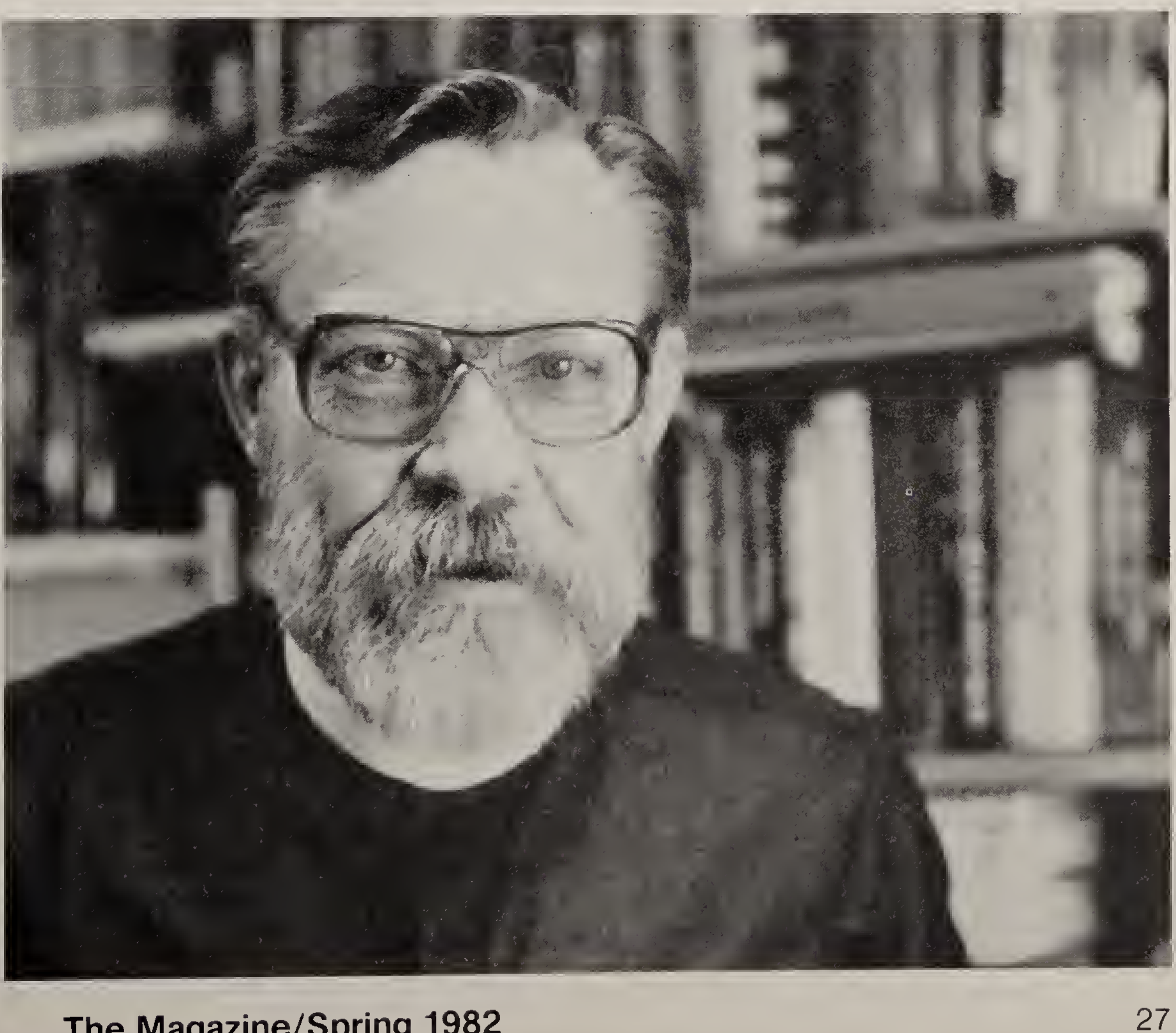
by Christian A. Hovde, Ph.D., D.D.
Chairman, Department of Religion and Health

A tremendous increase in the technological capabilities of medicine has resulted in great strides toward the solution of some of the most difficult survival problems of human beings; it has at the same time created a new set of decision-making problems for those who must choose to use or not use available technology in a given case.

At the turn of the century, nurses and physicians worked with the tools they carried in their handbags—the drugs or nostrums commonly available in the community in which they practiced—and the knowledge they carried in their heads. Implicit in their practice was a knowledge of the limitation of their ability to "save" their patients from serious disease. When a general practitioner sat beside the bedside of a dying patient, in company with him, it was recognition not only of the relationship of one compassionate, empathetic, supportive human being to another, but of the state of the art.

But those days are over. The logarithmic increase in medical research and knowledge, and in the speed of publication has created an environment in which it is almost impossible to keep up with all the medical journals. Many specialists, finding it difficult to assimilate all the latest information on new developments in their fields, have found it necessary to subscribe to information services that produce only the title pages of all the journals in a given discipline in order to choose which articles to read.

Some computer centers now are able to take a list of a particular patient's symptoms, compare them to stored information on similar



Christian A. Hovde, Ph.D., D.D., is the Bishop Anderson Professor of Religion and Medicine.

cases, and give the physician a list of possible diagnoses, along with a series of tests that would narrow down the alternatives.

One possible result of such technology is a significant increase in correct diagnoses and successful treatment of disease. Another possible result, however, is the removal of human factors inherent in the interaction between patient and physician. Can a computer identify a patient's feelings of fatigue, discouragement or confusion? Can it instill the will to continue the fight against what may appear to be insuperable odds or a hopeless environment? Can a machine help a person who sees no reason to go on living? Certainly it will not help a physician decide how or when to stop treatment of a person who has nothing to look forward to.

There is a need that each of us has to be known and understood by those around us. If we feel that we are unknown, the isolation and fear of being misunderstood, of being a victim rather than a victor, becomes greater. The greater it becomes, the less able we are to mobilize our inner resources to overcome difficulties like severe illness.

A hospitalized patient, for example, wants to be able to tell someone what it feels like to be in that situation. If those in the helping professions—physicians, nurses, chaplains, and others—do not listen, something no computer can do, vital pieces of information are missing which could contribute to diagnosis and recovery.

Another aspect of the increase in scientific information and skill is the opening of doors into areas not thought accessible just a few years ago.

Many of the procedures routinely used today, kidney dialysis, coronary bypass surgery, replacement of bones and joints, were thought to be impossible or at best extraordinary a few years ago.

As skills were honed, as technical equipment was developed and refined, as procedures previously thought to be impossible or extremely chancy become commonplace, easy and expected, the questions arose: "To what end should we use this procedure in this patient? Should we use it at all with this patient?"

The knowledge that something *can* be done very often implies that it *should* be done. But this is not necessarily true. Simply because a person has the ability and opportunity to use a handgun does not mean that he must or should use it. The ability to use amniocentesis to determine the genetic health of an unborn child does not immediately imply that, if a defect is found, abortion of the child is the correct choice of action. The consequences of an action must be contemplated, as well as the fact that it can be done.

But when a procedure can be done, and isn't, a high degree of stress can result in those who have acquired the knowledge and skill to perform it.

Such stress can be seen in another setting—the modern world of weapons development. For example, there are missile silos all over the world which are presided over by two officers. Each officer has a key and a certain set of information. Before a missile can be launched, each officer must use his key and independently enter his particular information into the computer. The officers remain in the silo for long periods of time, their only function to be ready to use the equipment and information they possess if and when they receive orders to do so. They know that to launch the missile would mean massive destruction and loss of life. So each day they wait, poised to perform a job whose results they do not want, but for which they have been trained and must remain ready,. The impulse to begin the process on their own just because they *can* do it must be very strong. The frustration of noncompletion of the task is enormous. Indeed, some of the men so employed exhibit such stress that they must be removed from the job in order to preserve their mental health.

In the medical world, physicians, nurses, and other health professionals have been trained to perform procedures aimed at the preservation, not destruction, of life. But, like the officers in the missile silos, they are not always able to use the knowledge, skills and equipment that they possess. A patient may, for any number of reasons, refuse to undergo a procedure that the physician believes is warranted. A 40-year-old expectant mother may refuse amniocentesis because of her religious convictions. A cancer patient may refuse surgery or chemotherapy because he has no desire to prolong a life which he feels is no longer tolerable. In situations like these, the health professional's inability to complete the task as it is seen can produce frustration and a high degree of .stress. Such frustration may take form in attempts to persuade the patient to agree to a procedure when it is obvious that he does not understand its full implications or has decided for reasons of his own that he cannot agree. The result may be a break in the physician-patient or nurse-patient

> *"If we cannot demonstrate to a patient that he still has much to contribute, that he has value, why should he endure the hard work, pain and uncertainty of much of the therapeutic work thrust upon him?"*
>
> **Christian A. Hovde, Ph.D.**

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relationship. The patient may feel that he hasn't been listened to and that no one really cares about what is happening to him.

This is especially true in the elderly. As people grow older, the marks identifying them as valuable members of society—youthful appearance, productivity, physical and geographical mobility—gradually lessen or disappear. Having accepted the message of society that these are the measures of their value, the elderly come to believe that they are less valuable. In combination with the loss of others significant to them, they find it difficult to accept what is offered them when they become ill.

When asked to undergo surgery, radiation therapy or chemotherapy to halt or ameliorate the progress of cancer, to participate in physical therapy to restore some measure of independent movement following a stroke or amputation, to relearn eating habits after a diagnoses of diabetes, the elderly may question, "What for?—Why prolong a 'worthless,' intolerable life?"

Intervention that promises an increase in quality of life must first address these issues. It may require a severe change in the way a person sees himself before he can accept and use the technological benefits of the medical world. Long term, it may mean a change in the way society places values on people.

If we cannot demonstrate to a patient that he still has much to contribute, that he has value, why should he endure the hard work, pain and uncertainty of much of the therapeutic work thrust upon him? Who will love him any more if he does?

There is a feeling abroad that this society does not really love the poor, the ill or the aged; that what it loves is its procedures, the things that can be done for their own sakes, the excitement of doing what was undoable a short time ago. This may not be true, but, if it is not, the helping professions—physicians, nurses, chaplains, others—must find ways of demonstrating that every person is important to them however they may be limited in one phase of life or another. Then, perhaps, "quality of life" may become more than the possession of youth, mobility, future, productivity. It will also mean the contribution of experience, insight, historicity and the ability to love and be loved.

Another problem of advancing technology in medicine is the high cost of its development and use. This rapidly escalating cost of medical care is causing some to question the ability of the nation and the individual, if not the world, to sustain the process. Catastrophic illness can ruin a family if it is not protected by some sort of third-party payment arrangement.

With the increasing ability of medicine to perform fantastic feats, at a larger and larger cost, how many people can be helped in this way without causing larger disruptions in the delivery of care to those at early and less costly stages of illness? Shall we spend large amounts in the care of relatively few, while leaving the majority to suffer the lack of preventive measures that will keep them from serious illness? Can we afford to make advanced technology available to all the people of this country and the world, or must we find new ways of distributing care more equitably while still finding means to aid those in extreme conditions?

It should be said that, irrespective of cost, technological development *is* worthwhile if only to show us what should not be done. If it were not for the marvelous accomplishments of the last fifty or sixty years, the medical profession and its patients would still be in the horse and buggy and handbag stage. But we must realize that every new development opens new problems as it helps to solve one. As these problems become more complex, the human being involved tends to become lost in the equipment, the procedure and the goal of restored function.

We tend to forget that a person must want to get well; there must be reasons for restoring function or maintaining life. And each individual defines those reasons for himself. If he cannot participate in the decision-making around his difficulties, for whatever reason, he will not be able to mobilize his own internal resources to aid in the recovery process. And it is crucial that he do so.

The responsibility for aiding the patient to do this is not only that of medicine, but also of those persons—chaplains, social workers, family members and sometimes others who suffer with the same problem—who help by providing the opportunity to re-examine what has happened, who provide the chance to look at alternatives in order to rule them in or out, who give support while the examination and rethinking are going on, and who accept the fact that each person must make up his or her own mind. We may not like the decision made, but it is the ability to make decisions, even the ultimate one, about one's life, that really defines a person of value who possesses a quality of life in a highly technological world.

Religion and Health: Recognizing the Relationship of Body, Spirit and Psyche

by Janis Long Harris

Religion and health: seemingly unrelated terms. Or are they?

"Religion and health are intrinsic to one another," says the Reverend Bernard Pennington, Director of Clinical Pastoral Services in the Department of Religion and Health at Rush-Presbyterian-St. Luke's Medical Center. "Historically, in every religion, there are admonitions to take care of your body. Take ancient Judaism. Its dietary practices were a safeguard against disease that came from food in pre-public health days. Health care concerns were implicit in their ritual.

"Other ancient sacred literature also condemned things destructive to the body and personal relationships. In the New Testament you begin to see themes like moderation in all things, and condemnation of gluttony.

"It is intrinsic to all religion to take care of one's body," he continues. "It's the only medium we have to relate to our fellow man, creation and, therefore, to God."

Although, according to Pennington, religion has always been concerned about health and well-being, one of the most recent evidences of that concern has been the growth of the wholistic health care movement. Often associated with churches and religious groups, wholistic health care centers have been springing up around the country. Their goal: to treat people in an environment in which the spiritual dimension is seen as intrinsic to health.

"What a person feels and believes has everything to do with his health," Pennington says. "Hate will destroy you as quickly as bacteria."

Father James Corrigan, Supervisor of Clinical Pastoral Education and Coordinator of Pastoral Services, sees a relationship between emotional and spiritual struggles and physical illness. "This relationship," he says, "is obvious to chaplains who talk with hundreds of hospitalized patients each year. Many of the people we see in the hospital have gone through serious loss in the previous year, and the illness is an expression of that loss."

He believes there's a real temptation for both ministers who deal with sick people and medical health care people to look solely at their own "piece of things." "It's just as easy for ministers to get into that as physicians," he says. "But there *is* a connection between body, spirit and psyche—you can't separate them."

According to Pennington, Corrigan and the other members of the Department of Religion and Health, the spiritual dimension is a powerful ally, a fundamental ingredient of being healthy.

"Religion brings the spiritual, emotional, affective part of being human into the battleground for health," says Pennington.

"If a patient feels hopeless, the chances are he's not going to be able to engage in the conquest of his illness. We attempt to relate to him in such a way as to restore hope, to inform him of ways in which he can become whole again. We try to relate to him as if he had the power to play a vital role in his own recovery.

"In order to be healthy, people have to make major changes about eating, exercise, drinking, the way they behave. Religion has always been saying, 'look, you've got to make some changes. Stop berating your neighbor, stop disease-producing behaviors.'

"Man is not a mechanistic entity—spirit is the only thing that separates man from being a machine. We in the Department of Religion and Health nurture those

"It is intrinsic to all religion to take care of one's body. It is the only medium we have to relate to our fellow man, creation and, therefore, to God."

The Reverend Bernard Pennington

Chaplain Sherron Hughes Tremper visits a mother and her new baby.

spiritual qualities that are basic to being human. That's what we are about."

In a sense, the roots of the Department of Religion and Health go back to the birth of the clinical pastoral education movement some 57 years ago when Anton Boisen, a minister, became the first full-time chaplain in a mental hospital. With the support of Dr. Richard Cabot, a Boston physician who became famous for his technique of differential diagnosis, Boisen began the first experimental program to train theological students in a clinical setting. At the same time, physicians and nurses were introduced to the use of theological resources in the same setting. As a result, a number of clinical pastoral education organizations sprang up and later came together to form the Association for Clinical Pastoral Education, which now sets standards and training procedures for people entering the field. Today, most hospitals in the United States, and many in Europe and Australia are adopting the training as a requirement for professional chaplains on their staffs.

Father William Wagner, an Episcopal priest, and the Reverend Herbert Brockway, a Presbyterian minister, were the only two chaplains on staff in 1956 when St. Luke's and Presbyterian hospitals became Presbyterian-St. Luke's. Both ministers were familiar with the CPE movement and felt it would be beneficial to set up a CPE program at Presbyterian-St. Luke's Hospital. As a result, an experimental program was established in conjunction with the Bishop Anderson House (an independent religious foundation under the auspices of the Episcopal diocese of Chicago, responsible for chaplaincy to professional students and patients in the West Side Medical Center area). The program, in which CPE students from outside were placed in the hospital, was so successful, not only in training students, but in extending the amount of pastoral care available in the hospital, that Father Wagner and Brockway recommended that the hospital apply to become an official training base for CPE students.

In 1968, a Department of Pastoral Care and Education was established under the direction of Bernard Pennington. Quarter students were admitted, and a residency training program was begun. Later, at the request of medical students, the first course on death and dying was developed.

The Department of Pastoral Care and Education evolved into the Department of Religion and Health in 1975, when it became the first academic department of the new College of Health Sciences. Soon after, The Reverend Christian Hovde, Ph.D., D.D., an Episcopal priest, was named the Bishop Anderson Professor of Religion and Medicine and chairman of the department. The staff now includes chaplains representing most of the

Chaplain Pat Donworth confers with Paul W. K. Wong, M.D.

major Christian denominations and Judaism.

"This is the first and only department of its kind in the U.S.," says Father Hovde. "There are other chaplaincy departments, but they aren't involved in regular academic course work for medical and nursing students. There are humanities departments, but they're not concerned with pastoral care of hospitalized patients, but in understanding the condition of being human."

Whatever they call themselves, says Father Hovde, there is a need within academic medical centers and hospitals for people whose concern it is to address spiritual issues.

"I believe there's a need for a group of people trained in psychosocial care, who understand there is more to life than biology, psychology and interpersonal relationships," he says. "There's a need for people who are sensitized to spiritual issues, because very often troubled people have spiritual issues that they're dealing with.

"Pastoral care doesn't necessarily need to be given by someone who is ordained—there is a strong movement today toward lay chaplains—but it does need to be given by someone trained to give theological alternatives. Because in a crisis, for most of us, theological emphases become important pieces of business."

George Fitchett, D. Min., Associate Professor and Chaplain Supervisor.

"There is a connection between body, spirit and psyche—you can't separate them."

Father James Corrigan

The Chaplain at Work: Listener, Comforter

What sort of situations do the men and women who make up the Department of Religion and Health at the Medical Center face every day? Here are some examples:

The man had injured his back on the job and had been in and out of hospitals ever since. His inability to work made him angry. His doctor, the nurses who gave him injections, the woman who wheeled him to x-ray—he saw them all as co-conspirators in the plot to keep him in pain and out of work. The chaplain was different...a representative of God, not one of "them." He could talk, complain to her. The chaplain, sensing his complaints were rooted more in anger at his disobedient body than in fact, listened without judgment.

The woman was sitting alone in the hospital room when the chaplain walked in. She nodded toward the empty bed, explaining she was waiting for her husband who was in therapy. How was he holding up, the chaplain asked. She confessed that he didn't know about his cancer. He knew he had a tumor, but he didn't know that it was malignant. She hadn't told him because she didn't want to upset him. Twisting her hands, her eyes anxious, she asked, "Was I wrong, Father?"

They were an elderly couple, huddled in the waiting room outside the intensive care unit, shocked at the suddenness of the news. The doctor had been kind when he called to inform them of her sister's death from a heart attack, but it had been too much to take in, too unexpected. When they arrived at the hospital, the nurses had been kind, too, but they had the pressing responsibility of other very sick patients who needed care. Within a few minutes, however, the chaplain arrived. She gently ushered the bewildered couple out of the waiting room and down to the more peaceful atmosphere of the chaplains' office on the first floor. She answered questions. She listened. She allowed them to grieve.

"As God's representatives," says George Fitchett, D.Min., Associate Professor, Rush University, and Chaplain Supervisor in the Department of Religion and Health, "chaplains who listen and care are an unspoken testament to the attributes of a caring, listening God."

Listening, caring, comforting, counseling...just as physicians practice medicine, and nurses practice nursing, chaplains practice pastoral care. According to Father Hovde, clinical pastoral care deals with two sets of problems. First, he says, there are denominational concerns which require specific people to do special jobs, such as administering the sacraments. And second, there is the problem of establishing a relationship such that patients and family members can talk about what worries them, and have theological alternatives presented for them to examine—although these alternatives may not be presented in theological terms.

The practitioners of pastoral care at Rush-Presbyterian-St. Luke's vary in age, sex, denominational background and specialty interest. They include staff chaplains (Father William Wagner, Director of Pastoral Care at the Johnston R. Bowman Health Center for the Elderly; and Carole Temming, a member of the Sisters of Mercy), part-time chaplains (Father Kyron O'Connor, a Catholic priest, Dr. Newton Nesmith, a retired United Methodist minister and retired Rabbi Leonard J. Mervis), clinical pastoral education supervisors (Bernard Pennington, a Presbyterian minister, Director of Clinical Pastoral Services; Father James Corrigan, a Catholic priest, coordinator of Pastoral Services; Russell Burck, Ph.D.,a Presbyterian minister and George Fitchett, D.Min., a minister of the Reformed Church of America), as well as six pastoral care residents, six extern students, and five field education students. These are the "chaplains" who serve patients and staff throughout the Medical Center.

The chaplains make rounds on patient floors, respond to requests for prayer, sacraments, counsel or a listening ear, comfort family members whenever a death occurs, and take turns handling chapel services. Although some chaplains are assigned to provide pastoral care to patients of a particular denominational background (for example, Carole Temming is particularly responsible for Roman Catholic patients in Presbyterian-St. Luke's Hospital) certain high stress areas—the Bowman Center, the Special Care Nursery, Medical Oncology, Gynecologic Oncology, and Medical Cardiology—have chaplains assigned solely to those areas.

Pat Donworth, a member of the Dominican Order, is the resident assigned to the Special Care Nursery (SCN). She chose that area because she wanted to work closely with family members and staff.

About 95 percent of the babies in the SCN are premature, some as small as one pound. Others have genetic or cardiac problems; many are fighting for their lives. Often staff members experience the exhilaration of watching a

THE DENIAL OF DEATH
GOOD GRIEF
DEATH AND DYING
When Going to Pieces Holds You Together
AUGSBURG
Bryant
ALDWINCKLE DEATH IN THE SECULAR CITY EERDMANS
CARE FOR THE DYING
Soulen
A SERVICE OF DEATH AND RESURRECTION
THE PURSUIT OF DEATH
CONGDON
Abingdon
DEATH AND EASTERN THOUGHT
The Human Encounter With Death
preaching about death
woman
WITH DEATH AND DYING
Dutton

gravely-ill baby recover, only to see another tiny patient lose the struggle for existence.

"Probably all of the nurses on the unit have had the experience of getting especially attached to one baby and then seeing it die," says Judy Fredericks, R.N., staff nurse. "It's like having your own baby die."

The emotional ups and downs of working in the SCN translate into stress, and Chaplain Donworth makes it part of her job to deal with it. When she makes her rounds through the unit every day, inquiring about patients and their families, she listens for signs of frustration, stress, anger, and depression on the part of staff members as well. The result: staff will often open up to her in a way they might not with anyone else.

"There are a lot of nurses in a small space here," says Fredericks, "and we face life and death situations all the time. It's draining, and sometimes we can't go to each other with frustrations. We *can* go to Pat."

Much of Donworth's time, of course, is spent with the families of patients.

"When a baby first comes in," says Fredericks, "the medical and nursing staff tend to be totally involved in medical care. But Pat is free to help support the family. And parents may confide things to her they wouldn't to a nurse or physician."

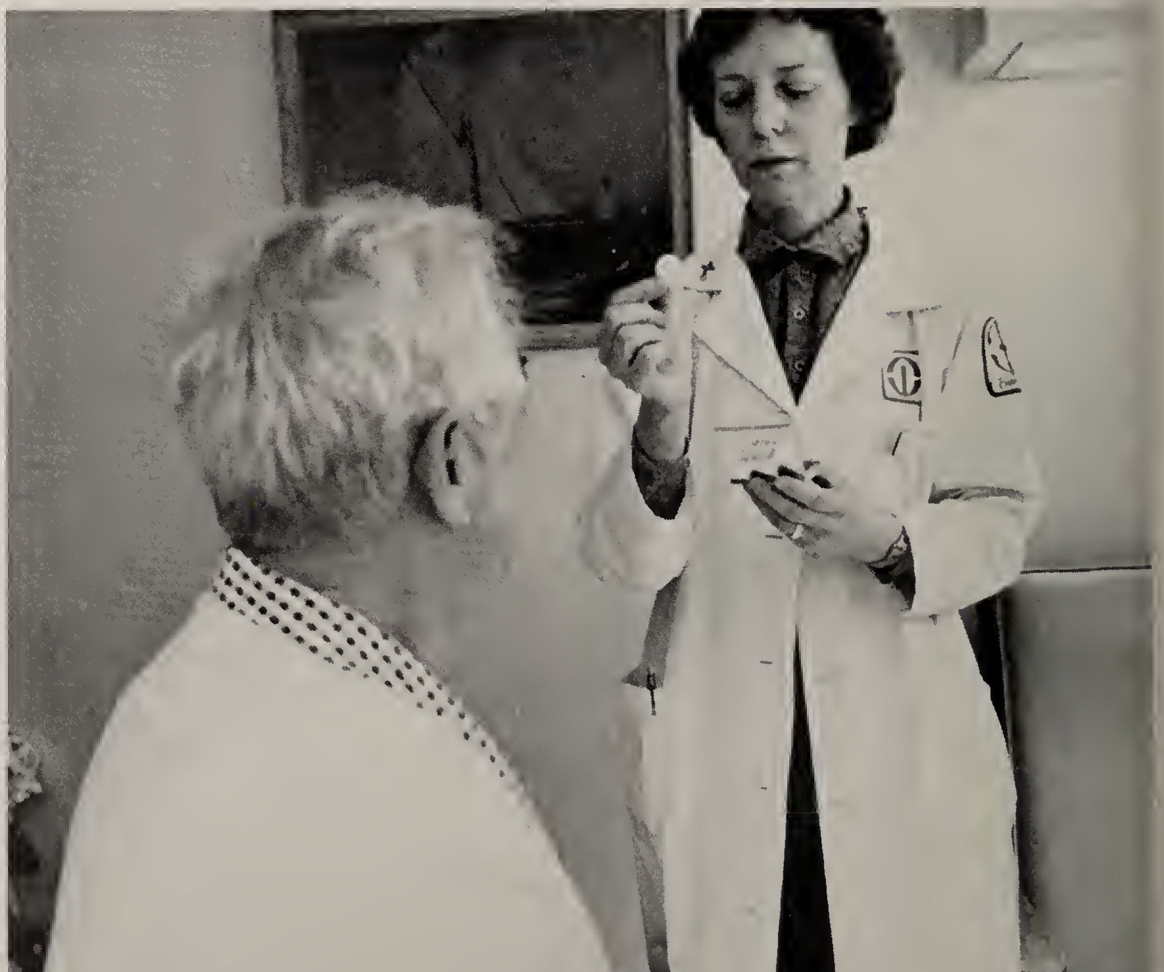
Marjorie Maddox, a patient at the Bowman Center, believes that the freedom she felt to confide in Medical Center chaplains was an important factor in her recovery from a deep depression.

The 70-year-old woman had ample reason to be depressed, having suffered a lifetime of health problems. At age 12, she contracted rheumatic fever which left her with a chronic heart condition. She had a hysterectomy in her 30s, and developed diabetes in her 40s. She has had eye surgery, nose surgery, breast surgery, gallbladder surgery, and surgery to amputate her leg. She has been hospitalized all over the city—eleven times at the Bowman Center.

Despite her many illnesses, despite the fact that she is blind in one eye, is in constant pain, lives alone and can only walk a few steps at a time, Mrs. Maddox has conquered depression. "I'm managing, I'm adjusted, and I'm happy," she says, "and the chaplains here have helped me a great deal in coming to that condition."

Mrs. Maddox first came to the Bowman Center in March of 1978, following her leg amputation. For a woman who prized her independence above all else, the knowledge that she would now have to depend on others for activities of daily life was a bitter pill. She began to struggle with depression and self-pity. And then, just one day after she had surgery for an aneurysm on her thigh, her mother died.

"I wasn't able to attend the fu-



Chaplain Carole Temming brings communion to a patient.

"As God's representatives, chaplains who listen and care are an unspoken testament to the attributes of a caring, listening God."

George Fitchett, D.Min.

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eral," says Mrs. Maddox, her face till sad at the memory, "and I was erribly upset.

"But the day of the funeral, Father Vagner came and took me to the hapel and we had our own little ervice," she recalls. "He listened vhile I talked about my life with my nother—we had lived together ever ince my divorce years ago. We lidn't talk about the passing, but bout the past, which was pleasant. He offered prayer, and then took ne back to my room.

"Since that memorable meeting, ve gotten to know Father Wagner ery well. Now, he and a new chapain (Sherron Hughes-Tremper) both isit me.

"The chaplains here really fill a oid."

Then there's ten-year-old Cyndi Lehman, who has bone cancer. Last ummer, it was discovered that the nalignancy had spread to her lungs, ind she came to Rush for surgery. t was a frightening situation, not ust for Cyndi, but for her family.

Marti Swords, a pastoral care resdent, was working in the Pediatrics unit at the time.

"There were some scary times," says Mrs. Lehman, "and I needed someone to talk to. Marti was always here. She would let me talk when was afraid, and I knew I could cry f I needed to. She was a friend.

"We live in Indiana and my father needed the addresses of some moels in the area, so Marti came up vith a list. She would disappear and hen come back with everything we needed."

The fact that Marti was a chaplain vas important to Mrs. Lehman.

"My religion is very important to me, especially now since we've been through this," she says. "I appreciated knowing that Marti has faith, too, and I think that's important. I really believe that the chaplains are vital to the hospital."

Clinical Pastoral Education: The Focus is on Humanity

The delivery of pastoral care by Pat Donworth, Father Wagner, Marti Swords, and other chaplains is only one aspect of the Department of Religion and Health.

Like other departments at the Medical Center, it has a triune focus on clinical practice, education and research.

"We are one of approximately 400 accredited institutions in the U.S. to offer clinical pastoral education (CPE)," says Dr. Fitchett, "and we offer more student units of CPE each year than any other institution in our region."

Students within the department include externs, students from local seminaries studying here part-time to fulfill field education requirements; interns, enrolled full-time for 12 weeks, and either recent seminary graduates, seminary students taking a quarter off or lay people; and, six stipended residents, usually theological graduates, completing a year-

Russell Burck, Ph.D., Clinical Pastoral Education Supervisor

Seminar provides opportunity for students and residents to discuss problems in delivery of pastoral care.

long program in clinical pastoral education.

Under the direction of staff chaplains and CPE supervisors, students and residents provide pastoral care throughout the Medical Center. Since the delivery of pastoral care is to a large degree an acquired skill, learning that skill requires the doing of it, and some method of critique.

"Most of us don't listen very well," says Father Hovde, "and the only way to find out what we're missing is to get feedback."

At regular seminars, led by Dr. Burck, and other supervisors on the staff, students present verbatim reports of their conversations with patients. These reports are used as a basis of discussion of what the student did, didn't do or didn't hear and of what problems may be evident in the pastoral person which may have prevented hearing.

Students also participate in integration seminars, in which classic texts about the integration of religion and psychology are read and discussed; open seminars, without formal agendas, allowing students to discuss whatever is on their minds—such as feelings about their developing professional roles, or incidents during their hospital rounds; and worship seminars, in which a student's "dry run" sermon and order of service is critiqued by other students and supervisors.

The department also teaches courses to medical, nursing and health sciences students at Rush University on medical ethics, death and dying, faith and healing, and—a new course—ethics and Jewish religious tradition.

Xavier Smith, M.S., R.N., Practitioner-Teacher in Oncology, found the ethics class had a definite impact on his work.

"In oncology, we often see patients who are considered terminal and there are many ethical dilemmas about life-saving devices and whether or not we should do anything aggressive to prolong life," he says. "The ethics course offered by the Department of Religion and Health didn't give us the answers, but it helped us examine the dilemmas."

According to Dr. Burck, Assistant Professor and Clinical Pastoral Education Supervisor, who team-taught the ethics class with Ann Marie Brooks, D.N.Sc., R.N., Chairperson, Psychiatric Nursing, there are both problems and benefit
associated with clergy teachin
ethics.

"If you teach with an outcom
dictated in advance by the religiou
point of view," he says, "the studer
will resist. It looks like a sneaky wa
to teach religion. I try to emphasiz
standard concepts that do no
belong to one particular religiou
tradition.

"On the other hand, the religion
ist is prepared to identify certai
kinds of events that come up i
ethical reflection—the associatio
of clergy with moral questions is
natural one.

"Many people see clergy, church
and chaplains as representing a cer
tain conventional morality which i
not to be questioned. The value o
a religionist teaching ethics is tha

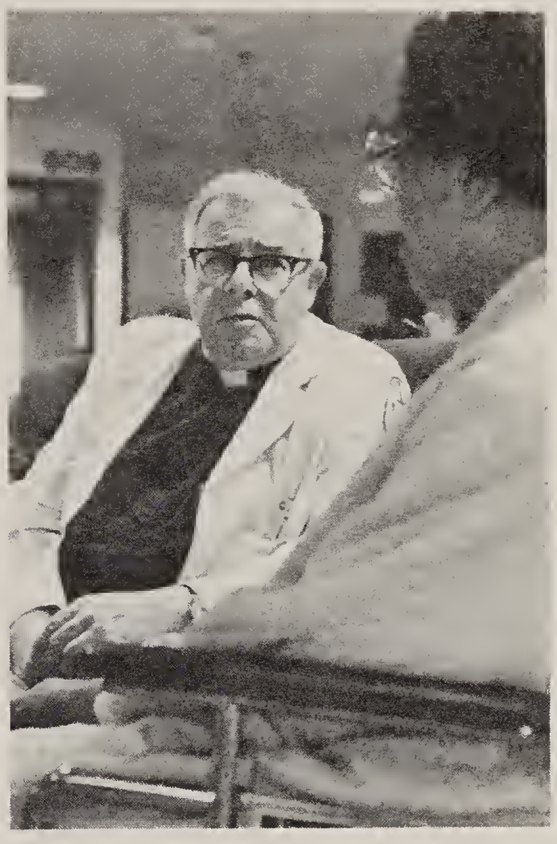
> *"The value of a religionist teaching ethics is that he or she can make it clear that there are many questions that are more open to discussion than people think."*
>
> **Russell Burck, Ph.D.**

he or she can make it clear that here are many questions that are more open to discussion than people think."

How do health professionals feel about religionists teaching ethics in a medical setting? Richard Penn, M.D., Associate Professor of Neurological Surgery and Associate Attending Physician, Presbyterian-St. Luke's Hospital, expresses this view:

"Religion has a legitimate interest in medical ethics," he says, "and so do physicians. Residents get an dea of how attendings deal with ethical problems by how we act—here's not a lot of discussion of ethical issues on rounds. But somebody needs to address them. In a sense, I can't imagine that chaplains wouldn't slant to their own way of thinking, but it's good to have the ssues raised and I don't care who does it."

The research component of the Department of Religion and Health grew out of the academic component—specifically, the course in death and dying. "There had been a lot written about what should be taught about death, and there were measurable attitude changes toward death by students as a result of these courses," says Dr. Fitchett, who coordinates research in the department. "But it was realized that even if attitude changes resulted from teaching, that's not the same as a change in behavior. In order to find out if there are behavior changes, we are in the process of developing an instrument to measure competence in psychosocial care of the terminally ill. We're trying to define competent and incompetent behavior."



Father William Wagner ministers to patients at Johnston R. Bowman Health Center for the Elderly.

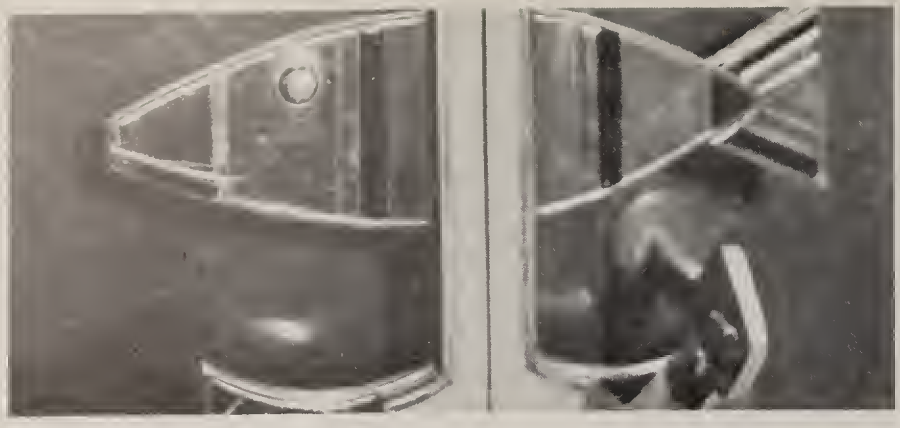
Another study, an acute grief behavior survey, begun in 1978, grew out of the clinical observations of chaplains working with bereaved family members.

"We are called to help support the family whenever there is a death in the hospital," explains the Reverend Fitchett, "and we see a lot of people in the early stages of grief. We began to realize there is a tremendous variety of behavior and wondered if there are ways to explain that variety. We wanted to know if it made a difference if the patient was young or old, or if the death was anticipated, things like that."

"Since no research had ever been done about the first hour after death, we decided to systematize observations about that initial period."

Information was collected on the behavior of 450 families and results are currently being analyzed.

Patients at the Bowman Center participate in a Passover seder.



Father James Corrigan conducts service in chapel of Presbyterian-St. Luke's Hospital.

Addressing Ethical Dilemmas

In addition to research, education and pastoral care, members of the Department of Religion and Health often serve as ethical consultants to other health professionals. Questions about whether or not to "pull the plug," about how aggressively a terminal patient should be treated, about informed consent and many other issues, are not uncommon in a large medical center. In some instances, the health professionals and family members involved want another opinion, the opinion of someone who approaches ethical decisions with a spiritual perspective. Increasingly that person is a representative of the Department of Religion and Health.

Ethical dilemmas are also addressed in a series of monthly interdisciplinary case conferences sponsored by the department. The conferences, often attended by standing-room-only crowds, examine the ethical aspects of actual case histories as presented by representatives of various disciplines. During the past year they have dealt with such issues as "Human Rights In Conflict"; "Where Delusion or Belief Interfere With Patient Care"; "Does The Patient Mean to Commit Suicide"; "Surgical Consent For The Incompetent Patient"; "Pacemaker Implantation in a Patient with End-Stage Neurological Disease"; "The Terminal Patient-Health Team-Family Conflicts."

Although conclusions are not necessarily drawn at the conferences, many of the health professionals who have attended believe that discussion of the issues is important. As one physician put it, "I feel the same way about an ethics case conference as I do about a medical case conference—it's no place to make a decision about a patient, but it's a good place to talk about a patient."

The Department of Religion and Health—an unusual title in a large, sophisticated academic medical center...a title reflecting an unusual role.

"We are, in a sense, gadflies," says Father Hovde, "in that we facilitate those issues that are connected to, but not necessarily a regular part of, the consideration of the medical community.

"It's hard for some people to include our concerns in their concerns, but it is becoming more evident that although medicine by itself can ask a person to mobilize his resources to get well, the patient himself must be convinced that what he is doing is correct. Religionists can help that happen if used well, and if they work well."

Study Trip Provides Clues to Multiple Sclerosis in China

Despite advances in the treatment of multiple sclerosis, there are still many unanswered questions about this often debilitating disease: What causes it? Why is the course of the disease so variable? Is there a cure? Why is it more prevalent in certain geographical areas than others?

It was primarily this last question that prompted Floyd A. Davis, M.D., the Robert C. Borwell Professor in Neurology and Acting Director of the RPSLMC Multiple Sclerosis Center, along with five other physicians from the U.S. and Great Britain, to travel to China last fall at the invitation of the Chinese Academy of Medical Sciences, on a travel grant from the Kroc Foundation.

"There appears to be a much lower incidence of multiple sclerosis in China than in the U.S. and Europe," says Dr. Davis. "We wanted to find out why there is so much MS in western countries, and so little in oriental countries."

With the hope of finding some clues to this mystery, Dr. Davis and his colleagues visited medical centers in Shanghai, Nanking, Hangchow, Xian and Beijing, where they made rounds in hospital wards, saw patients, and discussed clinical and research aspects of multiple sclerosis with Chinese neurologists. They also spent long hours lecturing in every city they visited. The western physicians were not alone in their desire for more information about multiple sclerosis—the Chinese physicians and medical students they met eagerly pumped them for the latest developments in treatment and research.

"They worked us hard," says Dr. Davis. "They know they're behind and they want to catch up. The

長生堂
經營项目
珍贵葯材 高級补品
人参.鹿茸 发菜.银耳
葯酒.阿胶 中西成葯
LONGEVITY DRUG STORE
Valuable Ingredients of Traditional
Chinese Medicine High Quality Tonics
EDIBLE BIRD'S NEST MEDICINAL LIQUOR
GINSENG PILOSE ANTLER TREMELLA
Chinese & Western Medicine

Traditional Chinese medicine still uses many herbal remedies.

A demonstration of acupuncture.

Cultural Revolution set them back ten years. At Capital Hospital in Beijing, the premier teaching hospital in the country, they only have students through the second year level because education stopped during the Cultural Revolution. The man who is now the head of the neurology department at Capital, the top neurologist in the country, cleaned latrines during the Cultural Revolution."

Although the Chinese are very far behind in many ways, in general, the type of medicine they practice is very westernized, and according to Dr. Davis, their clinical judgments are quite sound.

"Clinically, there was a great feeling of equality," he says, "but they had very poor lab facilities to document findings."

The neurologists did see some traditional Chinese medicine—the use of acupuncture and herbal remedies—being practiced, but it was separated administratively and practically from western-style medicine.

"There is a very large institution, Institute of Materia Medica, which is collecting, cataloging and studying herbal remedies. Some of them are being tested in animals and seem to have anti-tumor and anti-inflammatory properties," says Dr. Davis.

"But very little traditional Chinese medicine is used in neurology," he observes. "Ironically, they don't use acupuncture for MS,

Chinese physicians and students listen attentively as Dr. Floyd A. Davis (far right, facing page) lectures on multiple sclerosis treatment and research.

"They know they're behind and they want to catch up. The Cultural Revolution set them back ten years."

Floyd A. Davis, M.D.

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whereas here some do. One herbal emedy, ganodolucidun, is being tudied in a very small group of patients with neurologic diseases. They think it might be of some help n MS, although they're not sure yet. But for the most part, MS is reated the same way in China that t is here (with drugs which affect he immunologic system)—we didn't come away with any special new treatments."

And what about the apparent ower incidence of MS in China? One possible explanation was that he Chinese had different criteria or diagnosing the disease. Dr. Davis and his colleagues found, however, that the disease we call MS appears to be the same disease that the Chinese call MS.

"We did find that they have an illness called Devic's Disease that we would have called MS," says Dr. Davis. "It tends to occur in younger people, is more abrupt in onset, more devastating to vision, and affects primarily the optic nerve and spinal cord. But in the West we would diagnose most "Devic's" patients as having MS. And even with all the cases of Devic's Disease and MS put together, there still appears to be a very low incidence in China." Just how low is not yet known.

Western research has found that people with certain tissue types (HLA A3, HLA B7 and Dw2) are more likely to develop MS. It has also been found that, although the disease is almost unknown among Blacks in Africa, American Blacks with MS usually have a caucasian gene.

"We think that perhaps susceptibility to MS is determined by caucasian genes," says Dr. Davis. "It may be that in China these genes are found in selected groups—or there may be another gene group which predisposes or protects against MS."

Because of the lack of research facilities and funds in China, however, virtually nothing is known about tissue types as they relate to MS.

China's priorities, points out Dr. Davis, are to feed and take care of her people (who now number close to one billion) before putting money into intensive research. "Research facilities are with a few exceptions very poor," he says, "and the kind of research that is done is largely determined by the government, which allocates funds. Since MS is not a big problem in their country, very little money is allocated for it."

Dr. Davis and his colleagues, however, would like to see some epidemiological studies set up in order to determine the true incidence of MS in China (since mild cases are not admitted to the hospital, they may not be reported and it is difficult right now to determine the incidence), and to find out if there are measurable genetic factors which differ in the Chinese and western populations. Such information could provide valuable insight into the cause of multiple sclerosis. And once the cause is known, medicine is one step closer to finding a cure. ⊕

J.L.H.

A Doctor and His Camera in CHINA

Robert R. Schenck, M.D., Associate Attending Physician and Director of the Section of Hand Surgery, Departments of Plastic and Orthopedic Surgery, is one of several members of the Rush family who visited the People's Republic of China during the past year. During his travels with a delegation of the American Society for Surgery of the Hand, Dr. Schenck took hundreds of color photos—several of which won blue ribbons in an annual competition sponsored by the Union League Club, Chicago. A selection of Dr. Schenck's photos of China's people and landscape, converted to black and white, are reproduced here.

The photographer as patient—Dr. Robert R. Schenck, whose photos of China are reproduced here, receives acupuncture treatment during his China visit.

Laurance Armour Day School: A Pioneer Employee Day Care Center

by Andrea Mann

Today, families with working mothers are becoming more the rule than the exception. In sixty percent of American families with children under the age of six, the mother is working outside the home. How are these children cared for? In the State of Illinois, although there are 8,156 licensed day care centers or day care homes, these facilities are not adequate to serve even a portion of the mothers working in the City of Chicago alone. The need for more day care in Illinois and throughout the country is becoming increasingly apparent, and private industries as well as government agencies are beginning to explore programs to meet this need.

Rush-Presbyterian-St. Luke's Medical Center was a pioneer in the area of employee day care. More than a decade ago the Medical Center recognized the importance of providing on-site child care services as a means of attrac ing and maintaining a stable em ployee population, particularly i an institution with such a larg proportion of female employees. I 1971, the Medical Center estab lished the Laurance Armour Da School (LADS) for the pre-schoo children of its employees.

Since then, LADS has come t be regarded as one of the mos innovative child care programs i the country. It has served as model for a number of day car centers now in operation in Illinoi and across the country, and continues to provide guidance an support in the planning of simila programs in health and industria settings. For example, the staff o LADS provided consultation fo Illinois Masonic Hospital whic established a child care center i Chicago's Lakeview community i 1976, and for a similar program i 1979 developed by Luthera

LADS students and teachers set off on one of many field trips to Medical Center facilities and Chicago attractions.

ndergarten teacher, Freddie Holmes, and dent study salamander display at Natural story Museum.

eneral Hospital, Park Ridge, inois.

In the past year alone, Jane rady, M.A.T., who has served as rector of LADS since its incepon, has answered over 70 quests for information on eveloping employee child-care ograms. This continuing interest parked the idea for a national on-credit course "Enhancing ecruitment and Retention: ospital Based Child Care Proams as a Benefit Option." A joint fort of staff members from LADS nd Illinois Masonic Medical enter, the course was introduced December, 1981 at the Medical enter and drew students from ospitals and medical centers in elve states.

What particular ingredients in the ADS program have made it so ccessful?

As Kristen Richardson, M.S.T., e school's curriculum coordinator, oints out, "Our program is ncerned with much more than eeping children busy and wellehaved. We have definite educanal goals geared to the emotional, cial, motor and cognitive develment of the students."

This educational emphasis is inforced by the school's location thin the Rush-Presbyterian-St. ke's Medical Center which has a nique set of health-related sources which can be used for e benefit of the children, and by a pportive group of parents scribed by Grady as "not just ghly motivated about their jobs, t about the quality of care their ildren receive."

Kristen Richardson, M.S.T., curriculum coordinator.

Jane Grady, M.A.T., director, Laurance Armour Day School.

Playtime is an important time for toddlers.

Today, the Laurance Armour Day School provides care for 100 youngsters from infants through 5 years old, children of staff members from 36 Medical Center departments. The school's staff includes 16 professional educators (the curriculum coordinator, seven teachers and eight assistant teachers), a social services coordinator, pediatric nurse, and consulting physician.

LADS offers three distinct child care programs: infant care, for children ages four months to two-and-a-half years; pre-school for children two-and-a-half to four years; and kindergarten, for children five years of age. Each of the three programs has its own curriculum, and, for all but infants, daily classroom activities which vary according to the age of the students.

Curriculum Coordinator Richardson works closely with the staff in developing teaching methods that are instructional as well as enjoyable for the children. "Play is the basis of all instruction at LADS," explains Richardson. "Young children learn best through play, so we try to provide an environment that is conducive to intellectual development through creative play. Activities get increasingly teacher-directed as the children get older, so that by the time children enter kindergarten, they begin formal instruction in math, reading and writing."

In addition, the Medical Center itself serves as an extended classroom. "The opportunities for learning here are limitless," says Grady. Children, for example, may take a field trip to the anatomy department of Rush Medical College where a professor uses a skeleton to explain how bones and muscles work in a way the children can easily understand.

Children learn first-hand about television by visiting the Medical Center's Biomedical Communications Department, where they act-out nursery rhymes and watch their performances on videotape. The Medical Center's Print Shop provides information on how a printing press works; the Carpentry Shop, lessons in wood-working; the Data Center acquaints children with how computer operators work.

One innovative program features bi-monthly visits to the Johnston R. Bowman Health Center for the Elderly, a nearby Medical Center facility. This inter-generational program was established between LADS and the Department of Recreational Therapy at JRB. Accompanied by a teacher the children share with elderly patients such activities as story-telling, music-making, making photo collages, frameloom weaving, and group exercising to music.

A particularly important feature of an on-site facility such as LADS is the proximity of children to their parents. Parents are welcome to visit as often as possible, and lunchtime visits are particularly popular. Whenever practical, the children also go visiting, traveling in small groups to their parents' workplaces. It's not only reassuring for children to see where their parents work during the day, but it's also educational. "I really feel there's an advantage to my children seeing where I work and knowing that I'm so close by," says Dianne Williams, a secretary in the department of family practice, and president of the LADS Parents

Advisory Board, whose twins Donna and William, are kindergartners at LADS. "There's no mystery about why we're separated durin the day, and they really understan the purpose of my work."

An important by-product of th LADS program is the opportunity i provides for students preparing t enter the health professions a Rush University to gain first-han educational experiences:

- Medical students taking a pediatric rotation, and residents i child psychiatry and pediatric visit LADS to observe the children
- Graduate and undergraduate students from the College of Nursin come to LADS to teach a safet class, and to conduct healt screenings as part of their nursing practicums;
- Speech and audiology student from the College of Health Sci

s part of inter-generational program with hnston R. Bowman Health Center for the lderly, teacher Shirley Roberts, young udent and JRB patient share in finger ainting.

ences visit LADS to give speech therapy to children needing special attention and to administer speech and hearing tests.

In addition, LADS is also a earning resource for other educa- onal institutions. Each year sychiatry residents from the nstitute of Juvenile Research, raduate students from the Erikson nstitute, and student teachers from earby colleges and universities omplete special degree require- ents at LADS.

Whether a mother should stay ome to care for children or seek ork outside the home is becoming major and difficult decision for ore and more American families. ut, for the parents and children at ADS, this decision has been uccessfully resolved.

"When other parents are critical r have fears about day care for hildren, I tell them about my kids," ays Catherine MacLeod, M.D., irector, Clinical Pharmacology nit and Assistant Professor of nternal Medicine and Pharmacol- gy, Rush Medical College, whose on and daughter are now enrolled LADS. "The children are really e best evidence of the quality of ur day care facility. My children re well-behaved, they have lots of iends, they read at an earlier age han most children, and, most

ur-year-olds make pictures with beans, rn and other food in arts and crafts class.

Water table helps three-year-olds understand concept of shapes. Foster Grandmother Allemer Brewer shows how.

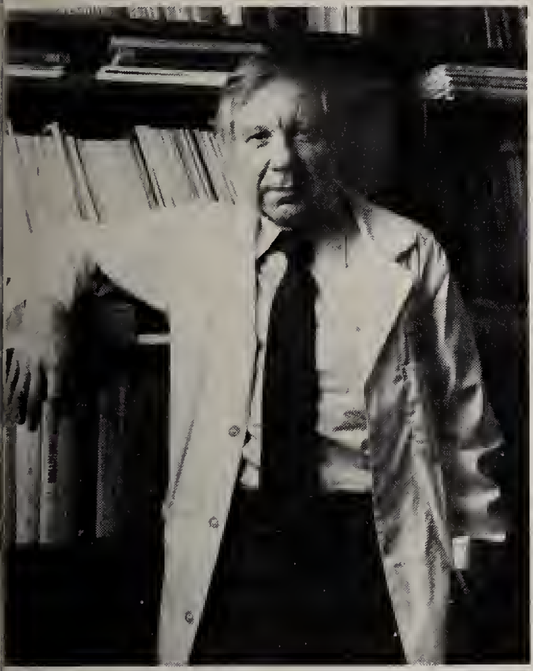
important, they're really happy children."

Her observations are borne out by the academic performance of the children who have been at LADS during the past decade. Alumni of Laurance Armour Day School attend virtually every private and public school in Chicago, and follow-up surveys show that, whatever the educational setting, children from LADS make excellent pupils.

Channel 5, NBC-TV, visited LADS for a recent series on Chicago day care centers.

RushRounds

Malkinson Named to Finnerud Professorship; Economou To Smith Professorship



Frederick D. Malkinson, M.D.

The 28th endowed professorship t Rush-Presbyterian-St. Luke's edical Center has been named in onor of the late Clark W. Finnerud, .D., an alumnus and professor of ush Medical College. The first lark W. Finnerud, M.D., Professor f Dermatology is Frederick D. alkinson, M.D., Chairman of the epartment of Dermatology and rofessor at Rush University.

Dr. Finnerud, for whom the rofessorship was named, was a ioneer in the field of dermatology. e was a member of the Rush edical College faculty from 1919 ntil his death in 1977. A 1918 raduate of the College, he ublished extensively on a variety f dermatological subjects during is lifetime. Dr. Finnerud was lso president of the American cademy of Dermatology and yphilology, and active in several uropean dermatology societies. The professorship in his name was stablished by his widow, Gertrude innerud.

Dr. Malkinson has had an equally istinguished medical career. He ame to the Medical Center in 1971 s Professor and Chairman of the Department of Dermatology after serving on the faculties of The University of Chicago and the University of Illinois. He has published extensively and has served as editor of the professional journal, *Archives of Dermatology* since 1979.

Dr. Malkinson is a Harvard graduate and took a special six-year sequence in the Harvard Medical School to prepare for research and teaching as well as practice in the broad field of medicine.

A member of many professional societies, Dr. Malkinson is on the Board of Editors of *JAMA*, editor of the *AMA, Archives of Dermatology*, and a Trustee of the Institute for Dermatologic Communication and Education.

In another recent appointment, Steven G. Economou, M.D., was named the Jack Fraser Smith Professor of Surgery. The Smith professorship was established in 1974 by Mr. Smith's widow, Bertha Spaeti Smith, to honor the former treasurer of Swift and Company.

Steven G. Economou, M.D.

A noted cancer surgeon, Dr. Economou is Professor of General Surgery at Rush Medical College and Senior Attending Physician and Associate Chairman in the Department of General Surgery at Presbyterian-St. Luke's Hospital.

He is a graduate of The University of Chicago and Hahnemann Medical College, Philadelphia. He served his surgery residencies at St. Francis Hospital (Evanston), and Presbyterian Hospital, with a pathology fellowship at Cook County Hospital and a surgical oncology fellowship at Presbyterian Hospital. He joined the RPSLMC staff in 1955.

Currently, Dr. Economou is a member of the Executive Committee of Rush Cancer Center and Chairman of the Tumor Committee, Presbyterian-St. Luke's Hospital. He has published almost 100 articles on clinical material and research findings.

Dr. Economou is an active member of numerous professional organizations including the American College of Surgeons, the Society of Surgical Oncology and the American Association for Cancer Research. G.S.C.

Seminar Honors Rush Nephrologist

Some of the world's leading medical scholars visited Chicago for a one-day symposium to honor Robert M. Kark, M.D., Professor of Medicine and Associate Chairman, Department of Internal Medicine, for his 45 years of service to the medical profession, his colleagues, students and patients.

Dr. Kark is known as a founding father of the medical subspecialty of nephrology (study of the kidneys). He has received numerous awards for his work, including the National Kidney Foundation's David M. Hume, M.D. Memorial Award, the highest given by the foundation, for his contributions to furthering the understanding of kidney diseases utilizing the techniques of renal biopsy. He has also been honored with two John Simon Guggenheim Fellowships.

The Symposium on Liver, Nutrition and Kidney Disorders was co-sponsored by the American College of Physicians (Illinois Region), the Illinois Society of Internal Medicine and Rush Medical College. Among the experts attending were J. Steward Cameron, M.D., F.R.C.P. (Lon.) Professor of Medicine at Guy's Hospital, London, England; Friederich Deinhardt, M.D., Professor of Microbiology at Max v. Pettenkofer Institut in Munich, West Germany, and Dame Sheila Sherlock, M.D., F.A.C.P., F.R.C.P. (Lon.) a Professor of Medicine at the Royal Free Hospital in London, England.

Dr. Kark, a fellow of the American College of Physicians and the Royal College of Physicians (London), has published over 200 research papers, primarily in the areas of nutrition and kidney disease. He has served as consulting editor to the *American Journal of Medicine, Journal of Laboratory and Clinical Medicine, Journal of Clinical Nutrition* and *Nephron.*

A native of Cape Town, South Africa, Dr. Kark earned a degree in physiology from the University of Cape Town and completed his medical education at Guy's Hospital, University of London. He was a Rockefeller Traveling Fellow, Adrian Stokes Memorial Fellow, and Research Fellow at Harvard Medical School.

During World War II, he served as Officer Commanding, Medical Research Team, Allied Land Forces, Southeast Asia.

From 1949 to 1952 he was visiting professor and acting chairman of medicine at Meharry Medical College, Nashville, Tennessee.

He is an emeritus professor of medicine at the University of Illinois and serves as consultant to numerous foundations, governmental and private institutions.

G.S.C.

RPSLMC to Study Malaria Drug

Primaquine, a synthetic drug, has been used to treat malaria for the last 30 years; but scientists still don't know how it works or why it causes anemic complications in some genetically-predisposed patients. Under terms of a $150,000 grant from the World Health Organization, Paul E. Carson, M.D., Professor and Chairman, Department of Pharmacology, Rush-Presbyterian-St. Luke's Medical Center, is studying primaquine and other antimalarial compounds in an effort to find the answers to these questions.

"More than half the world's population lives in potentially malarious areas, and this disease continues to be the most common infectious cause of mortality in the world," says Dr. Carson. "In the United States, we've seen increases in the number of malaria cases not only during the influx of returning veterans from Korea and Vietnam, but also currently in returning travelers and refugees. The disease is also greatly increasing worldwide, in part due to emerging strains of malaria that are resistant to present antimalarial drugs."

The grant will enable Dr. Carson and his associates to explore questions about primaquine's action and toxicity using new drug testing technology that was unavailable during earlier primaquine research. The researchers also hope to find a malaria cure that does not cause an anemic response in the 200 to 300 million people of all races who have the genetic predisposition, called G6PD, a condition which Dr. Carson discovered in 1956.

J.P.

BHAT Study Ends; Drug Proved Effective

For the last three and one-half years, Rush-Presbyterian-St. Luke's Medical Center has been one of 32 institutions across the country participating in the Beta-Blocker Heart Attack Trial (BHAT), a research project to study the effects of the drug propranolol on people who have survived heart attacks. The National Heart, Lung,
and Blood Institute of the U.S
Department of Health and Huma
Services, which had funded th
research, halted the study last fa
when the drug's effectiveness i
preventing death following a hea
attack had been established. Th
study had been scheduled to en
in June of 1982.

"The BHAT study confirm
previously-reported studies i
Norway and Sweden about th
effectiveness of beta-blocke
drugs," says James A. Schoenbe
ger, M.D., Professor and Chairmar
Department of Preventive Med
cine, and principal investigator a
RPSLMC. "The fact that studies o
beta-blockers done in thre
different parts of the world, usin
three different forms of the drug
are consistent is a strong indicatio
that the drug should be use
routinely following myocardia
infarction. This is a powerful findin
because when you advise use of
treatment routinely, a new thera
peutic standard is established."

Some 125 patients from Presby
terian-St. Luke's Hospital and fou
other hospitals, Communit
Memorial, West Suburban, an
Christ and Hinsdale hospitals
participated in the study throug
the Medical Center. Patient
studied had experienced a hea
attack five to 21 days before ente
ing the trial and had volunteere
for the study. Nearly 4,000 patien
nationwide have participated in th
$25 million study since it began i
1978.

The study was a double-blind tria
with half the patients receivin
propranolol, which slows th
heartbeat and the heart's deman
for oxygen, and the other ha
receiving a placebo. According t
the final results, patients receivin
propranolol had a 26 percent lowe
mortality rate than did thos
receiving the placebo.

J.

Five Elected to Board of Trustees

Thomas A. Donahoe, Cyrus F
Freidheim, Jr., Silas Keehn, Home

J. Livingston, Jr., and William A. Pogue have been elected to the Board of Trustees of Rush-Presbyterian-St. Luke's Medical Center. Their elections were announced by Harold Byron Smith, Jr., Chairman of the Board of Trustees.

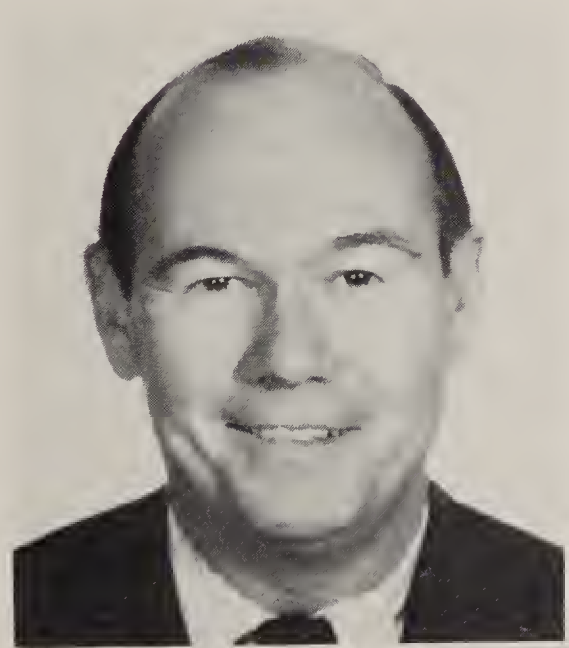
Mr. Donahoe is a managing partner at Price Waterhouse and has been with the firm since 1958. A graduate of Dartmouth College, he received his M.B.A. from the Amos Tuck School of Business Administration.

Mr. Freidheim is a managing director for the central, east central and southeastern regions at Booz, Allen & Hamilton, Inc. A graduate of the University of Notre Dame with a Master of Science in Industrial Relations from Carnegie Mellon, he has been with the firm since 1966.

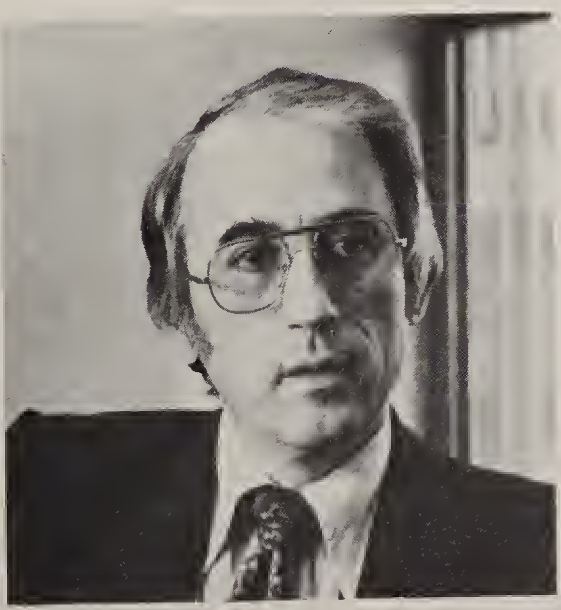
Thomas A. Donahoe

Mr. Livingston is a partner of Lehman Brothers Kuhn Loeb and is in charge of the Chicago office. He is a graduate of Princeton University and holds his law degree from the Kent College of Law. Mr. Livingston began his business career with the First National Bank and served that organization as executive vice president and head of the Corporate Banking Department before joining Lehman Brothers Kuhn Loeb in 1979.

Silas Keehn

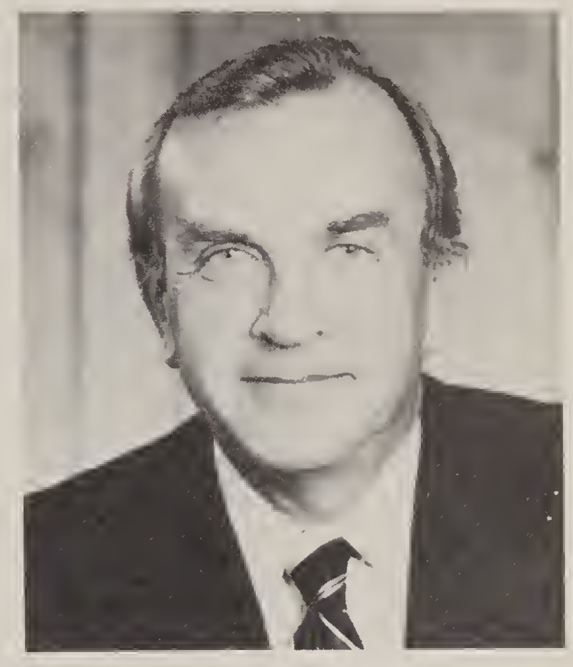


Homer J. Livingston, Jr.



Cyrus F. Freidheim, Jr.

Mr. Keehn is president of the Federal Reserve Bank of Chicago, and prior to that appointment last July was chairman of the board of Pullman, Inc. He began his career in banking with the Mellon Bank, N.A. A graduate of Hamilton College, he earned an M.B.A. at Harvard University.



William A. Pogue

Mr. Pogue is chairman of the board, president, and chief executive officer of CBI Industries, Inc. and its principal subsidiary, Chicago Bridge and Iron Co. He has been a CBI director and vice president since 1972 and was an engineering graduate of the United States Military Academy. K.K.K.

Wheaton College and RPSLMC Affiliate

Wheaton College, Wheaton, Illinois, and Rush University of Rush-Presbyterian-St. Luke's Medical Center have established combined academic programs in nursing and medical technology leading to bachelor of science degrees.

Wheaton College will provide the basic science and general education components of the pre-professional nursing and medical technology curricula, and Rush University will provide the professional curricula during two subsequent years.

The programs offer students two options. They may complete three years at Wheaton and two years at Rush and receive a B.A. degree in an academic major from Wheaton at the end of the fourth year and a B.S. degree in nursing or medical technology from Rush at the end of the fifth year. Students may also opt to complete two years at Wheaton, two years at Rush and receive a B.S. degree in nursing or medical technology from Rush.

Wheaton College, founded in 1860, is a private liberal arts college located in the west Chicago suburb of Wheaton. At present there are approximately 2,300 students enrolled on the undergraduate and graduate level, and faculty appointments total 150. J.P.

LaPorte Hospital Joins Health Care Network

LaPorte Hospital in Laporte, Indiana, has joined the Rush-Presbyterian-St. Luke's Medical Center System for Health.

"This affiliation marks the expansion of the Rush patient care network beyond the Illinois border," noted Mark H. Lepper, M.D., Vice President for Inter-Institutional affairs, RPSLMC.

The agreement was signed to enhance patient care services and educational programs, and make possible the sharing of resources, knowledge, and technology for the benefit of both institutions.

"Our first priority here at LaPorte will be oncology," said Leigh E. Morris, LaPorte Hospital president. "As an affiliate of the Medical Center, we can benefit from that institution's experience, training programs, and research as a major regional cancer treatment center."

LaPorte Hospital is a 213-bed, not-for-profit community hospital serving the LaPorte area. It was built after a merger between Holy Family and Community hospitals in 1966. The new facility opened in 1972 and now offers a full range of medical/surgical services and programs. Its Stress Center is LaPorte County's only licensed inpatient facility for emotionally disturbed and substance-abuse patients. The hospital is fully accredited by the Joint Commission on Accreditation of Hospitals and is a member of the Indiana Hospital Association and the American Hospital Association. It is one of only five Indiana hospitals recently awarded full certification by the Indiana Voluntary Effort Task Force for its cost containment efforts.

During 1981 LaPorte Hospital admitted 9,400 patients, performed almost 6,500 surgical procedures, served 16,500 emergency room patients and almost 40,000 outpatients, and employed some 700 people. J.P.

Doctor Finds Amazon A Medical Wasteland

As a Fellow in the Department of Hematology, Beatrice Hernandez, M.D., has access to the equipment, supplies and ultra-modern facilities of a sophisticated medical center. Quite a contrast to what she experienced last summer in the Amazon region of Brazil. A member of the Franciscan Sisters, Dr. Hernandez went to Brazil to observe the work of a Franciscan hospital and a water project in Santarem, Para, Brazil.

"It was an eye-opening experience," says Dr. Hernandez, "to see how such a large number of people have to live."

How many of the people in the Amazon area of Brazil live, is in the midst of poverty and disease. The Franciscan Sisters, who operate Holy Family Hospital in Santarem, are trying to do something about the disease. The poverty is another matter, because the sisters have very little money themselves.

"They operate on a shoestring," says Dr. Hernandez. "The hospital has so little money that they even reuse surgical gauze. They wash it, sterilize it, and then use it again!"

One of the hospital's projects is to train young women from the jungle as midwives and then return them to their villages. The project is an important one because so many of the villages in the interior are without midwives or any trained medical personnel. Most government "medical posts" in the interior, Dr. Hernandez observes, are manned by untrained people who dispense medicine the best they can. Even for trained personnel, caring for the sick in these areas can be difficult.

"On one of my trips, I visited a town called Juruti, which is 150 miles up the Amazon from Santarem," explains Dr. Hernandez. "It's a 15-hour boat trip and there are no seats on the boats, only hooks for hammocks. The hammocks are so

Trained midwives are important for Amazon jungle villages. Here, a student in Santarem, Brazil, prepares for service in her village.

se together that you bump into people next to you throughout trip."

nce in Juruti, a post lucky ough to have a sister trained as R.N., Dr. Hernandez saw a mber of patients, including a man with leprosy, a man with ute appendicitis, and a little boy ollen from nephrotic syndrome. he middle of the jungle, without medicine and equipment that uld be readily available in any dern hospital, there was little could do for the woman, whose rosy was very advanced. She uld only advise the relatives of man with appendicitis to take n by boat to the nearest hospital, ich was 100-150 miles away! r the little boy, with nephrotic ndrome and so much fluid in his lly that he couldn't breathe, Dr. rnandez could outline some atment for the nurse, showing r how to do paracentesis and scribing some drugs.

The two worst health problems the Amazon region," says Dr. rnandez, "are parasites and TB. is very common and is treated th only one drug, isoniazid. As a sult, the disease is probably very ug-resistant.

"The parasite problem results gely from a lack of good drinking ater; most of the families in the terior get their drinking and oking water from streams and agnant ponds, which are also ed for laundering and bathing. ain water is stored in large metal rrels, which are uncovered and equently rusty."

The problem with parasites can at least partially alleviated by gging more wells, which is why e Franciscans undertook a water oject. They organized a tiny mpany which digs wells for sinesses at commercial rates, d then uses the money thus rned to dig wells for the poor. llagers are charged only enough pay the workers. In some stances the new wells, dug tirely by hand with a piece of uipment that looks like a large rkscrew, virtually save lives, as Dr. Hernandez observed in the village of Cedra.

"An unusually dry rainy season left the village with a critical water shortage this past summer," explains Dr. Hernandez. "In early July (the end of what is usually the rainy season), their main water source, a stream about 2 kilometers from the center of the village, was already nearly dry. Almost all of the families had lost their crops, which meant that raising money for a well would be nearly impossible."

A well was dug, however. The Franciscan Sisters in Santarem paid half the cost from their Water Fund. For the people of Cedra, it was a life-saving decision.

But there are many other villages and many more villagers who have neither wells, nor the money to pay for them. The Water Fund is running low. Many villagers will continue to be plagued by parasites, TB and other diseases born of poverty.

"I would like not only to let people know what life is like in other parts of the world," Dr. Hernandez says, "but help them understand that we're responsible for each other. Because, humanistically speaking, we can't afford to ignore those problems." J.L.H.

Focus on Preventive Medicine

- High blood pressure
- Smoking
- A diet high in fat and cholesterol
- Lack of regular exercise
- Obesity

These are some of the lifestyle risk factors of cardiovascular disease which accounts for about 50 percent of the deaths in this country. To help patients reduce these risk factors and achieve a healthier lifestyle, a new private practice has been formed at Rush-Presbyterian-St. Luke's Medical Center to provide treatment, counseling and information relating to stroke and heart attack risk assessment and risk reduction. This new group, Preventive Medicine Associates (PMA), offers programs in smoking cessation, nutritional counseling, hypertension treatment, and stress reduction.

PMA is headed by James A. Schoenberger, M.D., Professor and Chairman, Department of Preventive Medicine, and Director, Preventive Medicine Associates. It also includes another physician, Gilberto S. Neri, M.D., Associate Attending Physician, Department of Preventive Medicine; a psychologist, Joseph C. Schoenenberger, Ph.D., Associate Scientist, Department of Psychology and Social Sciences; and four nutritionists, Eleanor Betz, R.D.; Theresa Dolecek, R.D., M.S.; Niki Gernhofer, R.D., and Yolanda Hall, M.S. Dr. Schoenberger says that in the future nurse practitioners may also be part of the staff.

Each member of PMA contributes to reducing risk factors in patients through his/her particular area of expertise. Drs. Schoenberger and Neri treat patients for medical conditions, such as hypertension, which can precipitate heart disease. The group's nutritionists show patients how to modify their diets to lower cholesterol levels, control weight, and reduce salt intake. They explain what food to buy, how to cook it, and what to select in restaurants. When there is a family history of heart disease, the whole family is invited for nutritional counseling. Patients may also participate in Dr. Schoenenberger's smoking cessation program. Finally, an exercise program is established for each patient and the doctors monitor progress.

How long should a patient follow their regimen?

"A lifetime," says Dr. Schoenberger. "We're teaching patients how to change bad habits and adopt healthy ones for the rest of their lives."

PMA is an extension of the

MRFIT model of clinical work. MRFIT (Multiple Risk Factor Intervention Trial) is a national study in which the Department of Preventive Medicine is participating to test the hypothesis that certain lifestyle changes, such as a diet lower in fat, will reduce mortality from heart attacks and strokes.

"During the MRFIT study," says Dr. Schoenberger, "we found such changes significantly lowered the risk of disease of our participants, and we plan to use those findings for the benefit of our PMA patients."

Group members will also continue research in this area. "Our plan," Dr. Schoenberger says, "is to render care as well as to do research. Since we have identified the greatest risk factors, we now want to research the best methods of helping people change their lifestyles to reduce these risks. For example, we will offer several different smoking withdrawal programs to our patients who want to quit smoking to see which methods of smoking cessation are most effective in causing a behavioral change."

The group's facilities include a demonstration kitchen for diet modification workshops; a conference room for group meetings of patients with problems, such as overeating, which have been found to respond better to group counseling; and audiovisual equipment used for making videotapes for patient education and training sessions. J.P.

Rush Researcher Studies Rare Clotting Disorder

Not many people get Thrombotic Thrombocytopenic Purpura (TTP). But this rare clotting disorder could hold the key to more common and equally deadly conditions such as stroke and some forms of heart attack, so TTP is of great interest to researchers like Kenneth Wu, M.D.

Dr. Wu is professor of medicine, and chief of the coagulation and thrombosis unit in the Department of Medicine's section of hematology.

TTP's clinical manifestations include excessive bruising, bleeding, fever, anemia caused by red blood cell breakdown, fluctuating neurological symptoms and ultimately kidney and other major organ system damage. These symptoms are due to the appearance of numerous mini-blood clots throughout the body. The name TTP means quite literally "blood clotting (thrombosis) which decreases and damages platelets (thrombocytopenia) and causes clotting and hemorrhaging at various sites (purpura)."

Although its cause is unkown, two major theories for TTP's origin are proposed: 1) that some foreign substance, perhaps an immune complex, is present in the patient's blood, causing the clotting and blood vessel wall damage, or 2) that there is a deficiency of some plasma factor which, if it were present in normal amounts, would protect against such unusual clotting. Dr. Wu and his colleagues think that a missing plasma factor may be the cause.

Until recently, nearly 95 percent of TTP's victims died within a year. But the use of plasmapheresis (plasma exchange) has improved the prognosis considerably. Dr. Wu speculates that the plasmapheresis procedure replaces a missing factor he calls the *prostacyclin stabilizing factor* which in turn prevents the patient's blood from clotting excessively. Two reports on his findings have appeared recently in the British medical journal, *Lancet*.

For the past two years, Dr. Wu and his colleagues have been treating and studying an unusual patient who has what appears to be a chronic form of TTP. Periodic plasmapheresis, and more recently, just plasma transfusion, keep him in remission. Every three to four weeks, when his platelet count begins to drop, he is re-infused.

"We have noticed that when he develops TTP symptoms, his blood shows an accelerated prostacyc degradation rate," says Dr. W Prostacyclin (PGI$_2$) is a pote substance (produced in the blo vessel walls) which, when pres in proper amounts, inhibits in propriate clotting. It is an unsta compound so degradation is normal process. But in this patie the degradation rate is excessiv fast so he does not benefit fr PGI$_2$'s protective aspects.

"When the patient is transfus his PGI$_2$ degradation rate returns near normal," notes Dr. Wu. The could be two reasons for this: t his blood is missing a factor stimulate PGI$_2$ production, or t his blood is missing some sort serum factor which would regul the degradation rate. Dr. W current findings support the lat hypothesis.

Studying the TTP patient's ser in the laboratory, he can demo strate a defect in PGI$_2$'s ability bind with another serum com nent. Prostacyclin's binding capac probably determines how sta it is. In the TTP patient, bindi capacity was found to be only percent, compared with 35 p cent for normal patients.

According to Dr. Wu, several oth patients with TTP have since be investigated and defective P binding is a common finding. W is now underway to character better the binding abnormality, a to purify the binding compone which he calls prostacyclin sta izing factor.

Notes Dr. Wu: "Recent studies other researchers have shown t still other mechanisms may be work. We think that vario laboratories like ours shou exchange blood samples so we c increase our understanding of t rare but important syndrome." C

Some Foods Seem to Cut Lung Cancer

orinted from the December 3, 1981 ue of The Washington Post by special mission.

By Victor Cohn
Washington Post Staff Writer

major new study indicates that ple—even cigarette smokers—who a lot of carrots, peaches, tomatoes, nach and other deep red, green or ow fruits and vegetables are less ly than others to get lung cancer.

his relationship has been reported scientists from four major institus—Rush-Presbyterian-St. Luke's dical Center, Chicago; Harvard and rthwestern University Medical ools and the University of Michi—in a lead article in the British dical journal, Lancet.

ll these foods are high in vitamin nd particularly in carotene, a natu coloring matter that is converted vitamin A in the body.

19-year study of 1,954 Chicago n, all Western Electric Co. employes, nd far less lung cancer than exted in men, even smokers, whose ts were high in carotene.

mong cigarette users of 30 years' nding, those who consumed the st carotene had eight times the risk hose who consumed the most carote, that is, those who consumed re carotene than three quarters of other smokers.

ore studies are needed, the scien s say, to prove whether carotene or vitamin A intake will reduce lung cer risk. Meanwhile, they add, "it ms prudent" to include caroteneh foods in daily diets.

'I'd suggest one or two helpings a ," the study's chief author, Dr. Rich Shekelle of Rush-Presbyterian-St. ke's, said yesterday. "I've increased carrot intake," Shekelle, an exoker, added.

Carotene abounds in vividly red, green or yellow fruits and vegetables, Linda Smith of the Community Nutrition Institute in Washington reported. Among others: dark salad greens (like endive, bibb lettuce and collard greens), beets, broccoli, green and yellow squash, sweet potatoes, grapes (especially red grapes), apples (especially in the skin) and persimmons.

But no one, said another scientist, should try to augment vitamin A intake by taking large numbers of vitamin A pills. These contain forms of the chemical that can cause liver damage in excess doses.

The Rush-Presbyterian scientists have been studying the Western Electric employes since the late 1950s. They recently showed that those who ate diets low in fats and cholesterol tended to have less cholesterol buildup in their blood vessels and also less heart disease.

In recent years studies in several countries have seemed to show that persons who consume foods high in vitamin A have less lung cancer. But these foods may be richest in either "pre-formed vitamin A" or retinol, or "pro-vitamin A," the carotene which can become the vitamin in the body.

The Chicago study found no correlation with retinol intake, but a strong correlation with carotene.

Thirty-three of the Western Electric men developed lung cancer over the 19-year observation period. Twenty-five of these 33 ate less than average amounts of carotene; 14 were in the lowest 25 percent for carotene intake.

Though most lung cancer occurs in cigarette smokers, nonsmokers apparently benefited too.

Dr. Michael Sporn of the National Cancer Institute has shown that various vitamin A compounds can prevent cancerous transformation of human and animal cells in the test tube. It's still not sure just which vitamin A or pre-vitamin A compounds might help prevent cancer, he said.

But there is good reason, he said, to test such compounds against a variety of human cancers. And tests in various human populations have recently started or are now being planned.

"NO MORE CARROTS, HENRY.... YOU'RE CARRYING A GOOD THING A LITTLE TOO FAR!"

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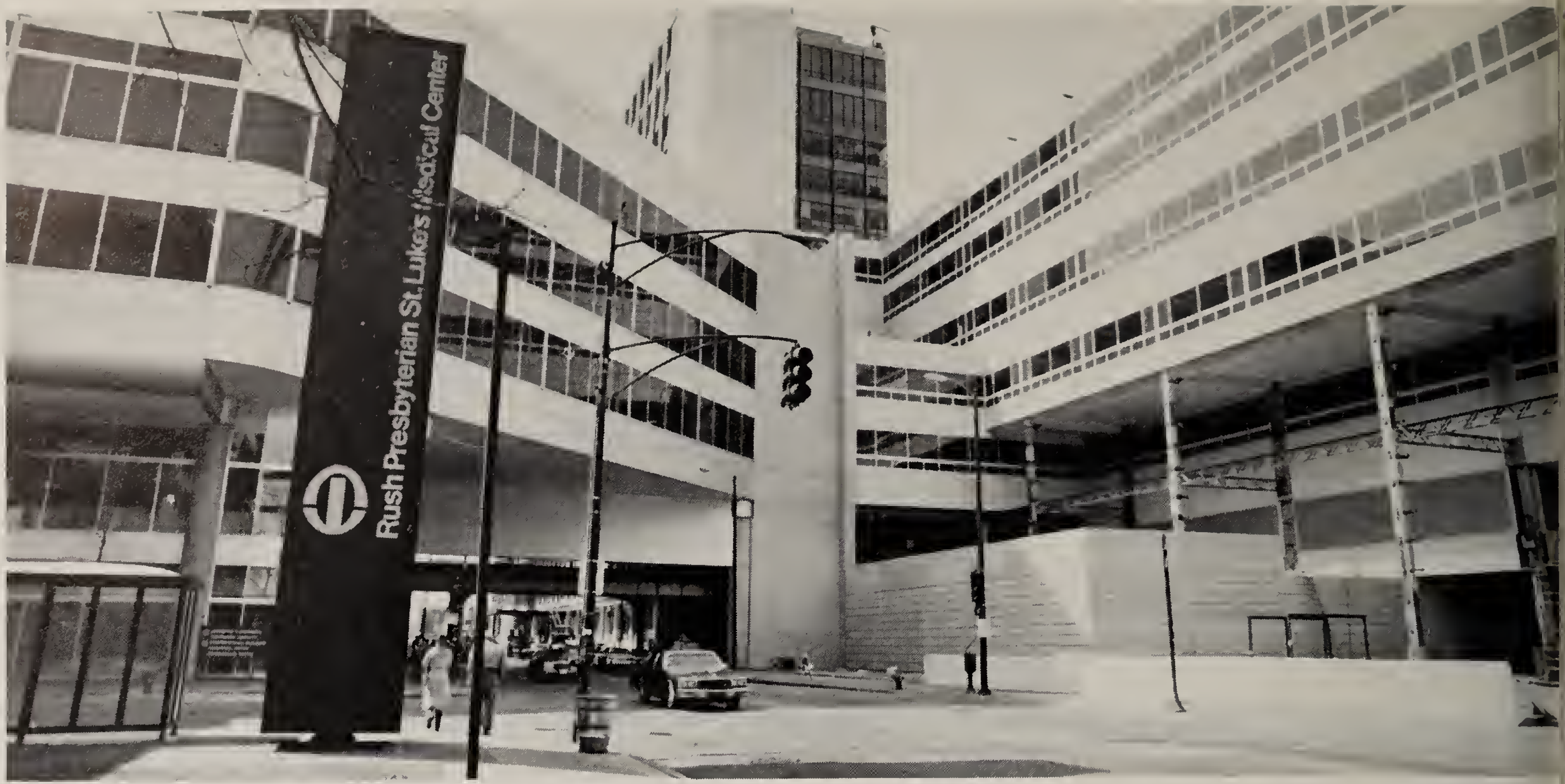

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At Rush-Presbyterian-St. Luke's Medical Center, the past decade has been a period of expansion and extensive renovation. The 30-acre main campus now includes 20 buildings. Two of these buildings are to be dedicated in May—the new Patient Pavilion and the Woman's Board Cancer Treatment Center. New facilities shown here include: (1)the Patient Pavilion (right) linked to existing Presbyterian-St. Luke's Hospital building and Academic Facility (left). Woman's Board Cancer Treatment Center is low building in center of photo; (2) expanded Professional Building overlooks new pedestrian mall on Medical Center campus; (3) Conference Center in expanded Professional Building accommodates continuing education programs and seminars; (4) one of 222 medical/surgical patient rooms in Pavilion, many of which face tree-filled atrium area.

2

e Magazine is a publication of the Office of Philanthropy
d Communication, Rush-Presbyterian-St. Luke's Medical Center.

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The Magazine
Rush-Presbyterian-St. Luke's Medical Center
1753 West Congress Parkway
Chicago, Illinois 60612

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Medical Center

The Magazine

WINTER 1982-83

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- Research in Aging
- Caring for High-Risk Infants/Mothers
- Advances in Medical Imaging

The Magazine
of Rush-Presbyterian-St. Luke's Medical Center
volume 7, no. 1/Winter 1982-83

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A view of Rush-Presbyterian-St. Luke's Medical Center. Right foreground is new Atrium Building of Presbyterian-St. Luke's Hospital, dedicated in 1982, which is interconnected to John L. and Helen Kellogg Pavilion (at extreme right). New wing has 222 patient rooms and includes the Surgical Center and Woman's Board Cancer Treatment Center. At left is Medical Center parking facility and, behind it, portions of the Academic Facility, housing Rush University classrooms and laboratories, and the Professional Building with physicians' office space. In all, the Medical Center now includes 22 buildings set on 33 acres.

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Old Age — The Best of Times; The Worst of Times?

Researchers at Rush-Presbyterian-St. Luke's Seek To Improve Quality of Longer Life

By Krys Kazieczko-Kuszak

It's been referred to as the "graying of America"—the trend which today counts about 25 million Americans, 11 percent of the total population, older than 65. It's a trend that is expected to continue. By the year 2030, projections indicate that figure will reach 55 million, with one person out of five living beyond 65.

There are more older people and they're living longer. Advances in medicine and medical technology have contributed to a steady climb in life expectancy...now 73 years, compared to 48 at the turn of the century.

At Rush-Presbyterian-St. Luke's Medical Center, the needs of the elderly have a high priority. The Medical Center's corporate plan, adopted in 1979, gave particular attention to the problems of caring for the aged, and the Johnston R. Bowman Health Center for the Elderly, now in its seventh year at Rush, reflects this concern. The Bowman Center, since its beginning, has served as a national prototype for hospital-based care of the aged. Bowman is characterized by its multi-disciplinary approach; a patient's health care team includes not only physicians and nurses but—as required—a social worker, psychologist, psychiatrist, nutritionist, chaplain, audiologist, speech pathologist and occupational, physical and recreation therapists.

Their goal is to help each patient attain the highest possible level of independent functioning, not only medically and physically, but emotionally and socially as well. And it's successful—70 percent of the patients are able to resume independent living upon discharge from the hospital.

During their training at the Medical Center, medical and nursing students, and students in occupational, physical and recreation therapy, speech pathology and hospital administration, as well as medical residents, and psychology interns, are sensitized to the needs of the elderly in preparation for their future careers. Skill development is matched by increased understanding and compassion.

In addition to patient care and education, geriatric research is extensively carried on at the Medical Center. Investigators are involved in a number of studies aimed at finding answers that will ultimately improve the quality of longer life. These projects focus on disorders that most affect our older population, including high blood pressure, arthritis and—perhaps the most frightening condition of all—senility.

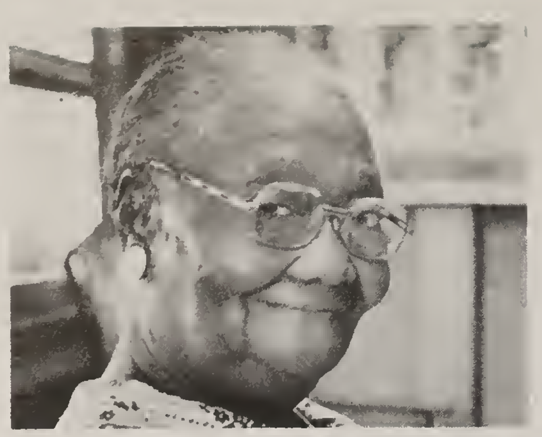
Senility: Inevitable or Treatable?

Alzheimer's Disease Study May Provide Answer

At first Ann couldn't remember little things, like where she left her keys or put her wallet. She started writing reminder notes with her daugher's phone number on them, even though it was the same number she had been calling for years. Finally Ann couldn't seem to follow the drift of phone conversations and it became easier for her not to call at all. Ann could be 80...65...even 50. Is her problem really senility?

Aging—many fear that it naturally leads to senility. That's not true.

Getting older does not necessarily mean losing all intellectual abilities. Our history is filled with elderly



achievers: Architect Frank Lloyd Wright completed the Guggenheim Museum in New York when he was 91. Douglas MacArthur, at age 70, became commander of United Nations soldiers in Korea. Colonel Sanders, of Kentucky fried chicken fame, didn't even start his fast food franchise until he was 66.

Contrary to popular belief, statistics show that only about five percent of the elderly live in nursing homes. More than half live with spouses or roommates, about one-fourth live on their own and another 20 percent stay with children.

Of course there *are* changes with aging; some physical decline is normal. Memory might also not be as good as it used to be. The overriding fear is that this is a sign of senility. It isn't.

Little memory lapses are part of the normal process of getting older. Confusion, withdrawal and even some intellectual impairment is sometimes caused by treatable illnesses. Depression, metabolic disorders, such as a thyroid problem, or reactions to medications can mimic senility. With proper diagnosis and treatment, however, these conditions can be reversed.

The outlook is not as promising for those with what doctors term "senile dementia." But even though a cure has yet to be found, research continues to offer hope. A major focus of study now underway at Rush-Presbyterian-St. Luke's Medical Center is Alzheimer's Disease, thought to be the main cause of senile dementia.

In Alzheimer's, intellectual function continually declines. Gradually, judgment becomes so impaired that the older person can no longer take care of himself. Estimates are that 1.5 million Americans suffer from this disorder. Not all, but most, are elderly. Statistics show that as many as six out of every 100 persons aged 65 and older are victims. According to Robert Butler, former director of the National Institute on Aging (NIA), the effects of Alzheimer's Disease and related disorders are the fifth leading cause of death in the United States.

Alois Alzheimer

What causes Alzheimer's Disease? Can it be stopped? How can families be helped to cope when a loved one is stricken with the illness? A number of Rush researchers are currently looking for the answers.

Jacob H. Fox, M.D., Associate Professor of Neurological Sciences, heads a major five-year study on cerebral decline in aging, funded by an NIA grant. The project, now in its fifth year, is a multi-disciplinary effort that involves the departments of neurological sciences, geriatrics, psychology, psychiatry and speech and hearing sciences. The major aim is to develop a reliable description of changes associated with Alzheimer's that can then be used for diagnosis.

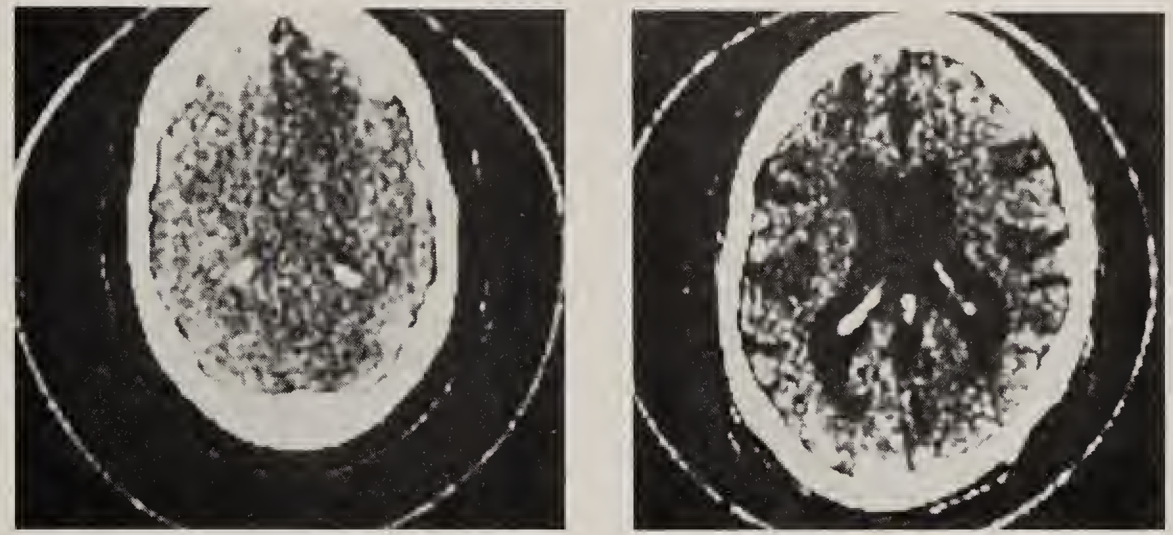
This disorder was first described in 1907 by German neurologist Alois Alzheimer. One of his patients suffered from a loss of memory that eventually eroded her ability to reason. At the autopsy, Alzheimer used a new type of tissue stain to look at the brain under a microscope and found an abundance of two types of structural abnormalities—groupings of degenerated nerve cells (senile plaques) and neurofibrillary tangles, which hinder the transfer of nutrition from one part of the cell to another.

Seventy-five years later there still no way of being absolutely ce tain of an Alzheimer's diagnos without a brain biopsy or an autops Doctors now make the determin tion by ruling out those illnesse that mimic senile dementia.

Dr. Fox and his colleagues hop their research will make it possib to describe systematically the ps chological and clinical change characteristic of the disease. order to do so, they are studying group of 60 Alzheimer's patien and a control group of normal old people, matched for age, sex, ed cation and socioeconomic statu Each member of the group dia nosed as having Alzheimer's wa given a complete evaluation inclu ing neuropsychological testing memory, speech functions and co nitive abilities, psychiatric inte views, CT scans to determine th degree of cerebral atrophy (cell lo and replacement by fluid) and ele troencephalograms (EEG) to me sure brain waves. Testing, except f the CT scan, is repeated annually

"A great deal of confusion remai about what should be considere

> *"When do we say a person has stopped having the normal changes of aging and has become a pathological case? We still need some answers."*
>
> **Jacob H. Fox, M.D.**



scans indicate differences in atrophy in
ins of two subjects. (Left) Little atrophy
resent in this brain, while (right) scan
eals large areas of atrophy (darker
tions).

hological, because what hap-
ns normally in people as they
e isn't that clear-cut," Dr. Fox ex-
ins. "When do we say a person
s stopped having the normal
nges of aging and has become
athological case? We still need
ne answers."
ccording to Dr. Fox, this is the
st careful clinical study ever
de of patients with senile demen-
and probably the best-studied
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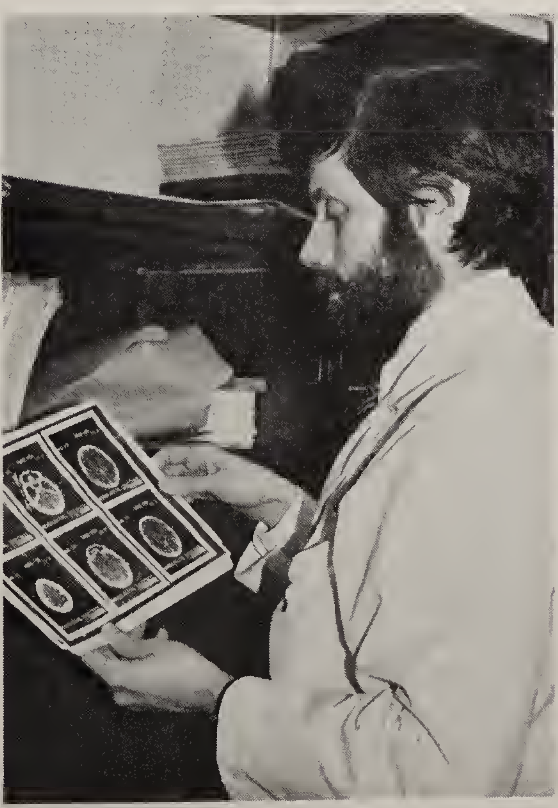
ect that some of the normal
trols might develop Alzheimer's
r the course of the project. If so,
vill mark the first time a group
eople has been clinically eval-
ted from the time they were
mal until the time they became
nile."
Typically it's a patient's family that
t identifies the problem. Usually
pinned on a particular event.
ad fell three years ago," a son
l recall, "and he's never been the
ne since." But the illness is grad-
and the "breaks" are often per-
ved as being more sharp than
y really are, according to Robert
Wilson, Ph.D., Assistant Profes-
of Psychology, who is focusing
the psychological aspects of the
ebral decline in aging study.
The most common initial com-
int is forgetfulness," Dr. Wilson
s. "All the Alzheimer's patients
ur study have an extremely bad
mory; they cannot learn new in-
mation. If you read them a story
d then within a matter of a few
conds ask them what the story is
ut, it's all gone. At most, they
nember a few stray details."

Dr. Wilson has also investigated what patients can remember of things presumably known before they got the disease. Using an elaborate test, Dr. Wilson asked each subject to identify photos of people who have been famous throughout this century and of events that are public knowledge. For example, they were asked to identify a photo of Elvis Presley taken when he first became a singing star in the '50s, or a picture of young Judy Garland about the time she played the part of Dorothy in "The Wizard of Oz." The Alzheimer's patients scored poorly compared to the normal elderly.

"It has been a rough hypothesis for more than 100 years that when we forget things, we forget more recent things first, but we've essentially ruled out that kind of explanation," Dr. Wilson says. "If old memories are preserved, then patients should do better in identifying photos taken when celebrities were younger, but that wasn't the case. Both the controls and the Alzheimer's patients showed an equal advantage in remembering the more recent photos. They were more likely to identify Frank Sinatra's picture when he was 60 years old than when he was 20. This strongly suggests that it doesn't make a difference how long the memory was stored—it goes."

The study is also focusing on language ability in the elderly. In a battery of tests, patients are shown pictures and asked to name and point out objects, to think of as many animals as they can in a min-



Jacob H. Fox, M.D.

ute, and to read aloud. They are also tested for writing ability and reading comprehension.

The nature of language problems depends on what part of the brain is affected. Different illnesses produce distinctive disorders. In Alzheimer's, brain cells are lost throughout the cerebral cortex, Dr. Wilson explains, so, as the disease progresses, language gradually becomes disordered in a more or less diffuse way. The patient has trouble comprehending what is spoken and read, has difficulty naming things on command, and repeating unusual phrases. These are all difficulties often associated with specific language disorders. So far in the study, Dr. Wilson and his colleagues have seen rather mild deficits, but they're across the board.

Is test performance prognostic?

Rush researchers are very interested in what it is about a patient's profile that could indicate how advanced the disease is, how much really meaningful time is left and what the prognosis is for survival. Prognostic indicators certainly would be an aid to patient management because, eventually, the Alzheimer patient will not be able to function independently. If a fairly precise estimate could be given of when that point will be reached, it would be of considerable help to the families involved.

But why is memory particularly poor? Why do language skills falter? By looking at CT scans and EEGs, Rush investigators tried to use physical variables to explain some of the mental deterioration.

When the CT scan was first developed, it was thought to be a real boon to the study of Alzheimer's because the disorder is one in which the entire cerebral cortex loses cells and tends to shrink. That could be measured in a fairly sophisticated manner with the new technology. But, according to Dr. Fox, it has been determined that this measure tells almost nothing about mental ability.

"Although there is a statistical difference," Dr. Fox says, "between Alzheimer's patients and the normal matched controls in the amount of cerebral atrophy—the Alzheimer's patients have more than the controls—there is so much overlap that this measure is not all that helpful."

As Dr. Fox explains, the people with absolutely no atrophy are most likely to be in the normal group and the people with the most profound atrophy are probably in the group with dementia, but for all the people in between—some are normal and some aren't. "You can't look at the CT scan and say this person has a lot of cerebral atrophy, and, therefore, must have senile dementia."

Although some researchers have reported that the density of the brain, as measured by CT scans, can be used to determine the presence or absence of dementia, Dr. Fox and his colleagues report no correlation there either. They have noted a modest relation, however, between mental ability and the amount of electrical slowing in the brain as measured by electroencephalography.

Dr. Fox speculates that even though normal older people may have lost brain cells, the cells that remain are functioning more or less normally. It may be that patients with Alzheimer's have not only lost cells, but the cells that are left are not functioning correctly.

"That may be the key," says Dr. Fox. "If in fact everything simply correlated with cellular loss, then nothing could be done. We have no way of replacing brain cells. But if
it is as we suspect—that thou
there may be an element of c
loss, there is also a very stro
element of physiologic dysfuncti
of the cells—then that, theore
cally, could be reversible, at lea
temporarily."

Are drugs an answer? Some Ru
researchers are looking at the po
sibility that drugs like lecithin mig
offer some hope.

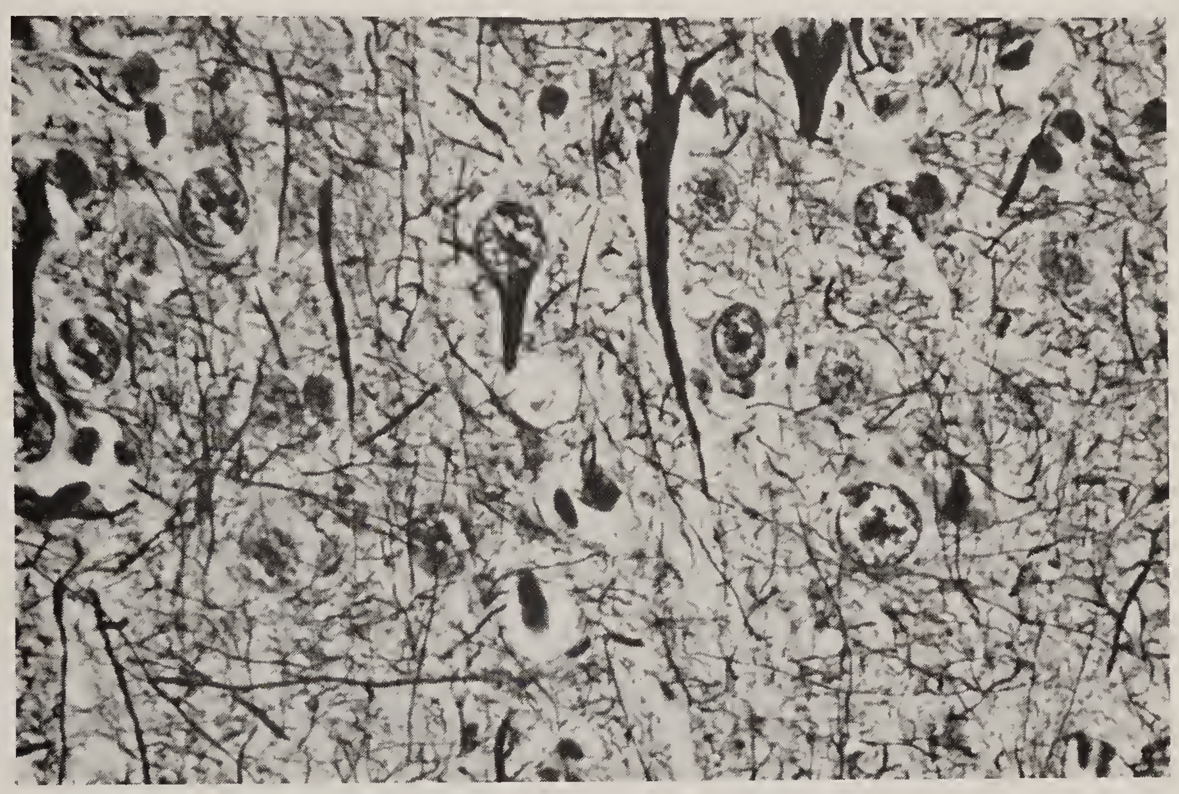
Lecithin is a major dietary sour
of the enzyme choline. This enzy
is necessary to produce the ne
rotransmitter acetylcholine whi
is one of the chemicals the bra
needs to pass messages from o
nerve cell to the next. Autopsies
the brains of Alzheimer's patien
have shown a deficiency in acet
choline.

The presence or absence
acetylcholine in the brain is ve
important. Experiments have sho
that if a normal person is given
drug that blocks the action of acet
choline and then given a memo
test, he will do poorly. If that acti
is reversed with drugs, memo
comes back. In a limited pilot stu
Drs. Fox and Wilson tried usi
lecithin to build up acetylcholine
Alzheimer's patients. Although th
did not notice any benefit in th
initial studies, research in this ar
is continuing.

Dr. Wilson explains that usi
drugs in this way is really treati
symptoms only. The course
Alzheimer's is so rapid that even
a successful way of treating t
symptoms at one stage is foun
the disease would soon ha
progressed so dramatically th
symptomatic relief wouldn't
sufficient.

Along with the research on wh
is happening within the brain stru
ture, the study on cerebral decli
in the aging is also concern

> *"Many who are diagnosed as having senile dementia are often isolated and set aside... this might occur in the patient's home as well as in a nursing home."*
>
> **David L. Ratusnik, Ph.D.**



uminum chloride applied to brain of rabbit
oduced neurofibrillary tangles (black peak
eas), a characteristic feature of Alzheimer's
sease.

ith the personality problems
zheimer's can produce.
Lawrence Lazarus, M.D., Assist-
nt Professor of Psychiatry at
ush-Presbyterian-St. Luke's and
rector of the Geropsychiatric Pro-
am at the Illinois State Psychiat-
c Institute, has been researching
e incidence of depression in
derly patients with Alzheimer's
isease. His preliminary findings
dicate that 15-40 percent of
lzheimer's patients he inter-
ewed appear to develop a clinical
epression sometime during the
ourse of their illness. This figure
ompares with a 4-15 percent range
r healthy elderly people living in
e community.

Lazarus describes the typical pa-
ent in the study as anxious and
neasy when questioned about a
emory problem. There is a tend-
ncy to minimize or deny those
ifficulties.

"It's difficult to comprehend a
roblem with memory," Dr. Lazarus
xplains, "because one's memory
so much an intimate part of ones-
elf. Someone that has had an
mputation can actually see that
e leg is missing. But when the
nind begins to go, it's frightening to
ccept. Because Alzheimer's is a
rogressive disease, it only gets
orse; the memory gets more and
nore impaired. It's difficult to adjust
nd adapt to that."

Psychiatric interviews have also
hown that, in general, Alzheimer's
atients have a lower sense of
elf-esteem and self-worth than do
e normal elderly. An older patient
ith Alzheimer's will often say "I
on't feel good about myself" or "I feel like my world is falling apart." He will talk about a time when he did feel confident and strong.

According to Lazarus, depression in Alzheimer's patients can sometimes be relieved with antidepressant drugs. Psychotherapy also can be beneficial in the early or even middle stages of illness when they are still capable of understanding what's being talked about. Patients who are paranoid or very agitated often respond to neuroleptic drugs.

The Role of Aluminum in Brain Function

Previous studies and laboratory experiments have shown that very small amounts of aluminum applied to the brain in rabbits and cats produce changes somewhat similar to those seen in brain biopsies or autopsies of patients with Alzheimer's, that animals treated with aluminum don't learn as well as others, and that the actual dosage of the metal needed to produce the abnormality in the cat is similar to the amount found in the brain of Alzheimer's patients on autopsy. These findings suggest that aluminum toxicity may actually be one of the factors responsible for the development of Alzheimer's in some people. Studies headed by Frank Morrell, M.D., Professor of Neurological Sciences, as part of the project on mental decline in the aging, addressed this question.

It's not a popular hypothesis. Aluminum is one of the world's most abundant metals. We're all exposed to it. We consume food that naturally contains varying amounts of aluminum; antacids are primarily aluminum compounds. Pots, pans, food containers and beverage cans are all made of aluminum. It is such a widespread element that it would be of substantial concern if aluminum is, in fact, toxic.

Thomas J. Hoeppner, Ph.D., Associate Professor of Neurological Sciences, tested the inter-

dependence of the structural change and the learning deficits induced by aluminum in laboratory experiments using young and old rats.

Aluminum was administered to the brains of the rats—the same amount that, when administered to rabbits in other experiments, produced histological (structural) changes in the brain characteristic of Alzheimer's Disease. But the rats, for some unknown reason, were not as susceptible to aluminum toxicity as other animals. What Dr. Hoeppner and his colleagues did find is that rats treated with aluminum seem to have a memory abnormality—they have difficulty in learning a spatial maze—but they do not have the histological change that is specific to Alzheimer's Disease.

According to Dr. Hoeppner, what this finding suggests, even though it is preliminary, is that learning problems and structural brain changes are two separate manifestations of aluminum toxicity.

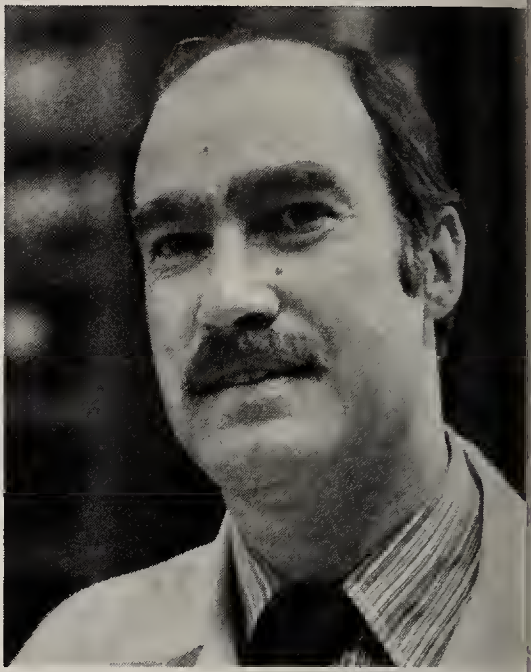
What is also interesting, Dr. Hoeppner adds, is that both young and old rats were treated with aluminum and all showed the same learning abnormalities, suggesting that the effect of the toxin was *not* age-specific. Now, Alzheimer's is essentially a disease of late adulthood and if aluminum toxicity is common in the development of the disorder, it might have been suspected that older animals would be more susceptible to its effects than the younger ones. But that was not seen in this experiment. What this might imply is that the changes that are produced by direct injection of aluminum are strong enough in an adult or younger animal to overcome whatever the natural process is in developing the disease. Prolonged excessive exposure to environmental aluminum or breakdown of a natural barrier to aluminum might be necessary in the disease as it normally develops.

Dr. Hoeppner speculates, too, that there may be more than one cause of what we call Alzheimer's Disease and in some people that might be aluminum intoxication, but, he adds, "I suspect that it's not the cause in most people with Alzheimer's." There is also a possibility that aluminum toxicity may depend not only on the absolute amount of the metal in the diet or exposure to it, but also other metals that one is exposed to. Animal studies have shown that the amount of aluminum in the brain is very strongly determined by what other metals are in the body.

Aluminum as a cause of Alzhei
er's Disease remains controversi
but there are strong proponents
the hypothesis. In Toronto, a stu
is now under way in which alum
num is being chemically remove
from Alzheimer's patients. Th
metal has also been implicated as
cause of dialysis dementia, yet a
other instance where exposure
aluminum is associated with dete
riorating mental ability. "Right no
says Dr. Hoeppner, "there are on
a few good competing etiologic
factors. These should be partial
sorted out within a few years so w
can concentrate more on preve
tive and therapeutic approaches."

The aluminum research aspe
of the five-year study on cerebr
decline has been concluded an
final data are now being analyze
Further aluminum studies outside
the aging project continue, howeve
and they will also have relevanc
to aging.

What Rush neurologists are no
trying to determine is what it is th
allows the rat to survive so muc
aluminum toxin, or at least what
toxic to other animals. Just what



Lawrence Lazarus, M.D.

Thomas J. Hoeppner, Ph.D.

"Caring for an Alzheimer patient is often like looking after a two-year-old in the body of an adult who is accustomed to doing what he wants."

Anne Schneider, Ph.D.

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that protects the rat from histogical changes? They are also amining systemic effects of posure to aluminum in food. ormally, the experimental model ed in the past was to apply alumi- um directly to the animal brain, so wasn't clear what the effective rriers are. Now researchers are ving rabbits high levels of alumi- um in food to determine whether ey develop any of the same mptoms.

Therapeutic Strategies for Patient and Family

It is not, however, only the pa- ent who suffers from the effects of lzheimer's Disease. The family, o, is greatly affected. Without a nown cure for Alzheimer's Dis- ase, family members are often at loss to know what can be done hen a loved one is stricken with e illness.

Several studies at Rush have een concerned with helping the atient function better and the fam- y cope. Results of a pilot project, eaded by David L. Ratusnik, Ph.D., irector of the Section of Speech nd Hearing Sciences, suggests at formal language stimulation ay put a temporary stop to the ecline of cognitive functioning in atients with senile dementia and ven somewhat stabilize their bility to communicate.

"It's not unusual for a diagnosis f senile dementia to cause a hange in the way family and riends relate to the patient," atusnik says. "Many who are diag- osed as having senile dementia re often isolated and set aside in nvironments where language timulation and demand for com- unication are minimal; this might ccur in the patient's home as well s in a nursing home. In such situations there is a strong possibility that language deteriorates even more quickly."

Dr. Ratusnik and his colleagues devised a clinical study to develop language intervention strategies and techniques that are appropriate for senile dementia patients. Then, after a series of group therapy sessions, extending over a two-month period and co-led by a speech pathologist and recreational therapist, they looked for changes.

The researchers found that after therapy most senile dementia patients showed an increasing awareness of themselves and others. They used more gestures, their vocabulary was generally better and word finding also improved.

Overall, inappropriate behavior such as random gesturing, perseveration (repetition of the same response) and echolalia, (echoing what is presented verbally to the patient) were modified or reduced. The group showed no significant changes in agitation, depression or fatigue, but Dr. Ratusnik suggested that there was marked improvement in emotional status for certain patients and believes that perhaps a psychotherapist should also be involved in future group language therapy sessions.

Memory problems continued to result in some disorientation and inappropriate response, but therapists conducted sessions within those constraints. The study required that patients perform numerous language tasks in an interactive setting "rather than allowing the patients' minds to lie basically inactive."

Activities revolved around the passing of objects like a picture or ball to one another to foster awareness; discussing a variety of subjects—immediate surroundings, rehabilitation activities and time and weather—to increase awareness of time and place; and showing patients an object while at the same time describing it to increase vocabulary usage. Repetitive verbal responses were decreased by intruding into these perserverations with more questions asked in a louder tone of voice.

One disconcerting but very important finding concerned senile dementia patients with an associated CVA. None improved, leading the researchers to question the efficacy of providing treatment to this category of patients.

Dr. Ratusnik and his colleagues developed a method of discussion-based conditioning of appropriate behaviors and outlined different discussion techniques that may be useful in nursing homes as well as rehabilitation hospital settings. Such therapy programs have not yet been established in most facilities caring for patients with senile dementia but, Dr. Ratusnik says, "there is definitely a need."

Anne Schneider, Ph.D., Assistant Professor of Psychology and Social Sciences, has focused on the problems of families in recognizing and coping with dementia. As part of a two-year study on aging, intellect and cerebral atrophy, she conducted extensive interviews with the spouses of 30 Alzheimer's patients.

A major issue for all families was difficulty in accepting the reality of the diagnosis, and the inevitability that mental decline would continue. It seemed, looking back, that they had been very slow to realize that something was wrong. The patient's growing inability to carry out everyday responsibilities may have been regarded as laziness or stubbornness, causing them to feel anger and resentment, even leading to arguments. This sets the

stage for strong guilt feelings when the disease is recognized.

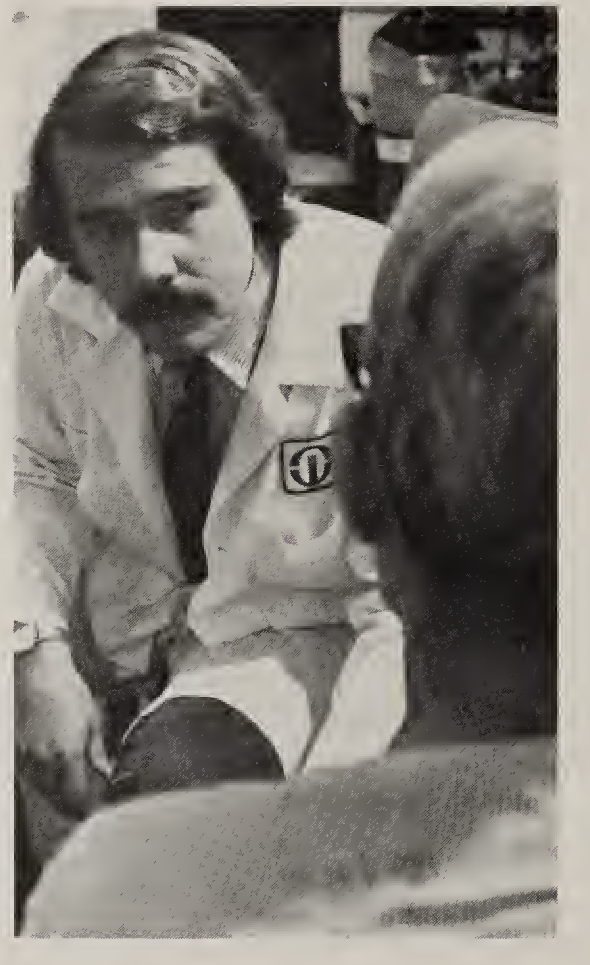
Once the illness is diagnosed, the spouse/family tends to blame themselves for not being aware of changes earlier. It also is hard to accept such a serious illness when the patient looks the same, and when there are periods when his old personality seems to return.

According to Dr. Schneider, "When you have caring, supporting family members who understand the situation the patients do pretty well at home. Though depression can be a problem as the disease progresses, they tend to lose insight into their condition and do not experience physical pain. But for the family, and particularly if there is just the spouse at home, the caretaking responsibility can become really overwhelming."

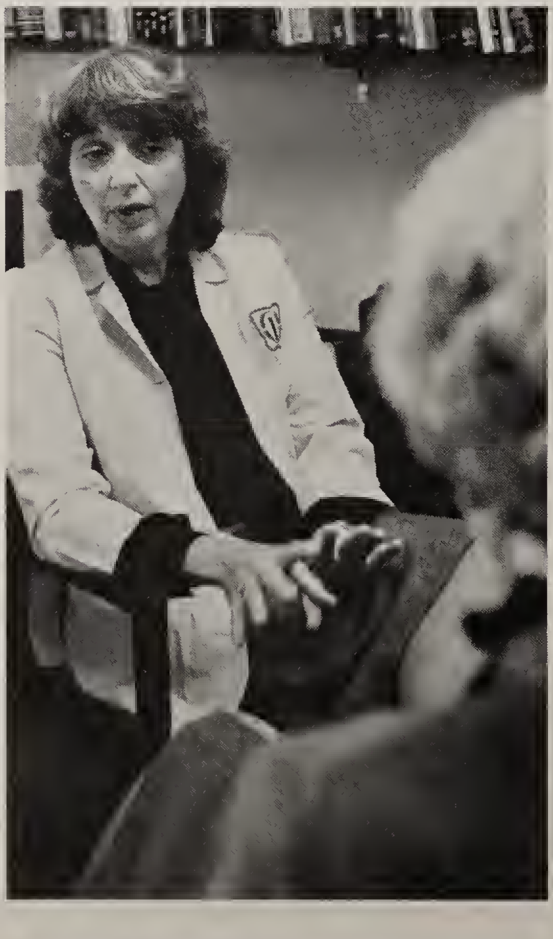
In advanced cases, the Alzheimer's sufferer cannot be left alone. He might wander out of the house and get lost or turn on the stove and forget about it so that a teakettle boils dry or, as an extreme, the house is set afire. Says Dr. Schneider, "It's often like looking after a two-year-old in the body of an adult who is accustomed to doing what he wants. The stress and strain it puts on the spouse, no matter how caring, can be really severe."

Dr. Schneider singles out social isolation as an important concern for the spouse. "After a while the person with Alzheimer's provides very little social company and even the best of friends lose interest in spending time with the couple. They tend to avoid the family. What may happen is that the spouse is left with very little social support."

Some sort of support network is crucial, according to Dr. Schneider, even if it's paying someone to come in one or two afternoons a week s that the spouse can leave the hous to see friends and enjoy othe activities.



David L. Ratusnik, Ph.D.



Anne Schneider, Ph.D.

In the past few years, a numbe of discussion groups have sprun up offering a forum for relatives Alzheimer's patients.

Do they help?

A pilot research project, heade by Dr. Lazarus, provides dat showing that the discussion grou is valuable for both the educatio and support it provides relatives Alzheimer's patients.

"Group discussions encourage sharing of common experience and feelings, which help to reliev some of the isolation and lonelines that relatives of brain-damage persons often experience," say Dr. Lazarus.

The study focused on one grou composed of relatives of patient who participated in weekly discussions, co-led by two geriatric psychiatrists over a 10-week perio This group was compared t another composed of relatives patients with Alzheimer's Diseas who had elected not to join th sessions.

Members of each group completed a written questionnair before the meetings started an then again after the last sessio These forms included question from tests widely used by psychiatrists to measure attitudes perceptions and expectation regarding the family unit an feelings of self-worth, depressio anxiety, self-satisfaction and contro

"We found that those participatin

iscussions came to have a better lerstanding of their relatives' ill-ss," Dr. Lazarus says. "That may ve contributed to their feeling of ater control over their life, which s shown by their answers to test estions after the discussions."

According to Dr. Lazarus, some re more realistic, accepted the t that there is no current cure ilable and acknowledged their ed to begin disengaging from ir relative. They appeared to cept their own feelings of anger d frustration over the increasing rden posed by their relative's ess and were better equipped cope.

Relatives not participating in the etings showed no marked ange on any measures when ir two tests were compared. on-participants did not appear to ve worked through their feelings rustrations, disappointment and ger," Dr. Lazarus explains. "One fe still considered getting a orce. Another wife continued to vote every minute of her time to oking after her husband."

Group participants said that the ssions helped them to find ways relating to and coping with their atives, two important goals they d set out to achieve by joining e discussions. They were dis-pointed, however, that there was, present, no cure for the disease.

Further study is indicated, Dr. zarus says, but in the meantime, dings from the pilot project mphasize the need to look upon e Alzheimer patient as a member a complex family network—a mily that is struggling to master a vastating life stress and to main-n some stability and togetherness, ile at the same time starting the inful process of preparatory ourning and disengagement."

Research at Medical Center Concerns Many Problems of Aging

In addition to the study of Alzheimer's Disease, more than two dozen different research projects which have specific applications to aging and the elderly are being conducted by various departments at the Medical Center, including nursing, neurological sciences, geriatrics, psychiatry, health systems management, psychology and social sciences, and preventive medicine. These projects include:

The 'Slowing Down' Process

A new collaborative study, funded by a grant from the National Institute of Aging, is looking at why older people are slow in information processing and decision-making. Dr. Frank Morrell is working with Rush colleagues Leyla de Toledo-Morrell, Ph.D., Associate Professor, Neurological Sciences, and Dr. Hoeppner and researchers at the University of Illinois-Urbana in an electrophysiological study of the late components of brain potentials evoked by meaningful sensory stimuli. The group at the University of Illinois will employ these measures in healthy college students and the Rush team with an aged and senile group. Differences between the two populations should begin to explain age-dependent changes in brain function.

The "evoked potential" is the brain's response to sensory stimulation. Such a response is so small as to be invisible with the ordinary recording techniques—for example, those used to record the electroencephalogram or electrocardiogram. However, special computer techniques have been developed which allow such small signals to be detected.

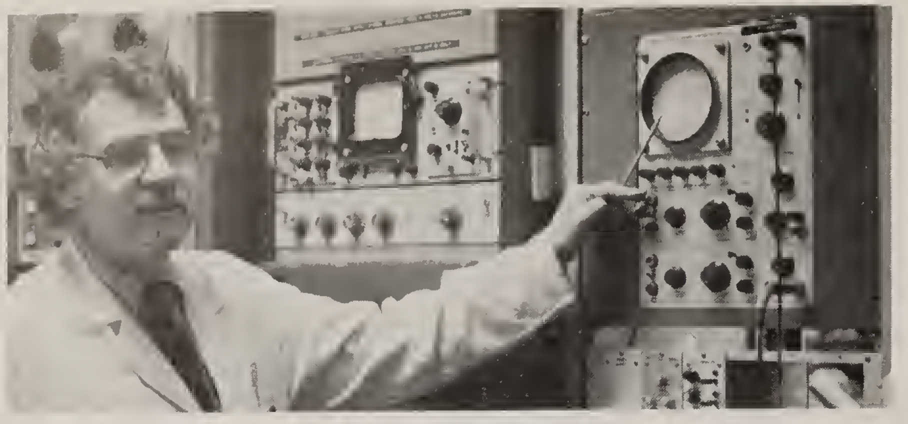
The late component of evoked potential is a response which signals completion of information processing, indicating that the brain has completed its analysis following a particular stimulus.

The application of new computer techniques now makes it possible to dissociate central information processing time from response time and to look at the two independently. If, for example, a person is asked to count the number of times a light flashes, the flash will trigger an electrical response in the brain that can be detected by electrodes and measured by computers. If that person is also asked to press a key every time the light flashes, the peripheral action time—the time it takes to press the key, can be compared to the central processing time, the time it takes to trigger an electrical response in the brain.

"Generally older people get slow but it's not certain why," says Morrell. "Is it because it takes longer for the brain to process the information? Does it take the body longer to react? We hope this study will give us clues."

Improving Memory

Even without illness, some memory problems are common with aging. Dr. Leyla de Toledo-Morrell and Dr. Frank Morrell are using an animal model to study why memory deficits occur in healthy older people.



Frank Morrell, M.D.

Leyla de Toledo-Morrell, Ph.D.

"We're really trying to get at the mechanism of the memory deficits related to aging," Dr. de Toledo-Morrell says, "hoping that once we find out what the mechanism is, we can find ways of improving it." The study was conducted as part of the five-year project on cerebral decline.

First, young and old rats were tested in an 8-arm spatial maze to assess memory function behaviorally. Each arm of the maze was baited with food and, after being placed in the center of the apparatus, hungry animals were allowed to visit each arm to obtain food. Since food, once consumed, was not replaced, the optimal strategy was not to go back to an arm already visited. Young rats can learn quite easily to run in the 8-arm spatial maze without errors and to solve the problem by using environmental cues.

Overall, aged animals had much poorer short-term or spatial memory compared to the young ones with few exceptions. Further testing showed that those animals that had poor spatial memory and didn't do well in the maze also had electrophysiological deficits in an area of the brain called the hippocampus.

There is now good evidence, Dr. de Toledo-Morrell says, that the hippocampus is involved in memory processes in humans. It's not where the memory is stored, she explains, but the hippocampus is thought to be crucial for the consolidation of short-term into long-term memories.

Further study is being planned at Rush to answer some new questions in the comparison of young and old animals which could have relevance to memory in man.

"We'd like to do an anatomical study of the brains of these animals to see if the older ones that are good in spatial memory also have a morphological picture which is more like the young ones," de Toledo-Morrell says. "Another direction in which we're going is biochemistry. If there are some biochemical deficits, it could be that drugs would be useful in restoring memory."

But first, Dr. de Toledo-Morrell cautions, "you have to find the mechanism before you can worry about how to improve it. That's what we're focusing on now."

Systolic Hypertension

One of the first studies to specifically address questions about systolic hypertension in the elderly is now underway at Rush and four other centers around the country in a collaborative project funded by the National Heart, Blood and Lung Institute.

Hypertension—high blood pressure—is known to increase the risk of heart attack and stroke. It's a major chronic health problem, especially for the elderly where the incidence is estimated as high as 15-25 percent of the population aged 60 and older.

In younger adults, hypertension usually means an elevation of both the pressure exerted by the blood on the walls of the arteries as the heart pumps (systolic blood pressure) and the pressure when the heart relaxes between beats (diastolic blood pressure).

In older people, however, high blood pressure is usually due to systolic elevation alone, largely because aging tends to result in rigidity of the aorta, the main trunk artery that carries blood from the heart to the branch arteries which distribute it to the rest of the body.

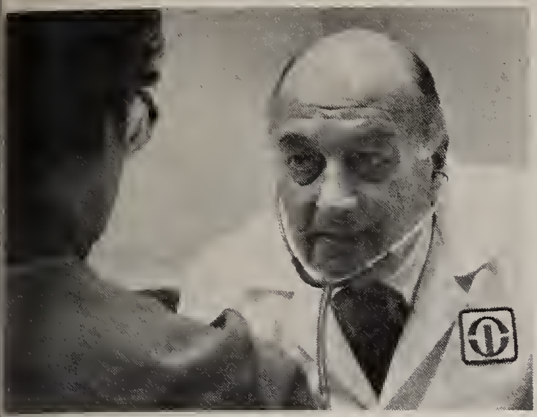
Major studies in the past ha shown that there is a definite ben fit from treatment of high blo pressure but these projects spec ically focused on elevated diasto pressure.

This latest study, called the Sy tolic Hypertension in the Elde Program, is being conducted sim taneously at Rush-Presbyteria St. Luke's Medical Center; the U versity of Alabama, Birmingha University of Pittsburgh; Washin ton University, St. Louis, and Kais Foundation Hospital, Portlan James A. Schoenberger, M.D., P fessor and Chairman of the Depa ment of Preventive Medicine, heading the study at Rush.

"It has been well document that systolic hypertension is ve dangerous," Dr. Schoenberger sa "It's a well-known cause of stro and heart attack. But what is n known is if this particular ki of hypertension will benefit fro treatment."

Dr. Schoenberger, past preside of the American Heart Associati and a vocal proponent of preve tive health care, says that when lectures to doctors around t country, inevitably one of the fi questions asked is what should done about systolic hypertensi "The truth is, we don't know; it ju has not been adequately studie Of course, some presume that should be treated and many do tors are doing just that, but we ne scientific data. That's the reason this study."

Each of the five centers is f lowing 10 patients who are ra domly assigned to receive eithe placebo or conservative doses standard medication prescrib for diastolic hypertension. Ea patient will be monitored for a ye with monthly check-ups.



mes A. Schoenberger, M.D.

Thomas P. Andriacchi, Ph.D.

Researchers hope to determine hether or not a large-scale trial volving about 5,000 elderly is easible—whether that large a ample could be recruited and if articipants would keep appoint-ients and take the medication as irected. They're also looking to ee whether blood pressure is owered with treatment and are hecking for the appearance of epression or dementia.

"There is a possibility," Dr. Schoen-erger says, "that if a person has enile dementia or depression that ondition may be accelerated if lood pressure is not under con-ol. That's the hypothesis we're test-ng." Psychological testing is being lone on each patient and those ound to be suffering from demen-a or depression are referred to a sychiatrist for confirmation.

"We're not looking at the inci-lence of disability and death in this ilot study because the sample size s too small," Dr. Schoenberger xplains. "That would be the main uestion in a large study—whether ou can prevent strokes, heart ttacks and dementia by treating ystolic hypertension.

"If we find out 10 years down the ne, after this study and the larger ne, that it makes a big difference or elderly people with systolic ypertension to take medication, hen all the nation would benefit rom it," Dr. Schoenberger says. "It ould help to empty beds in nursing omes and rehabilitation centers."

Bone Problems

A study conducted by Thomas P. ndriacchi, Ph.D., Associate Pro-essor of Orthopedic Surgery, is oncerned with patients who have ad surgery to replace the knee vith an artificial joint. His research is aimed at finding a way of getting them walking normally again.

Relatively new, knee implants have been done only in the last 10 years or so, principally as a treatment for osteoarthritis, a crippling, degenerative joint disease that is common with aging. As many as 100,000 surgical knee replacements are performed each year with the average age for a patient about 63.

In separate research projects funded by the National Institutes of Health and the Arthritis Foundation, Dr. Andriacchi is focusing on joint replacement design and on therapy following surgery. Studies are being conducted at the Medical Center's John L. and Beatrice Keeshin Human Motion Research Laboratory, located within the Department of Orthopedic Surgery and considered one of the nation's most sophisticated laboratories for the study of human movement.

According to Dr. Andriacchi, hundreds of different knee joints are available but one of the main differences in design is the amount of normal anatomy that is preserved.

Some designs allow surgeons to leave more of the ligaments, particularly two, the anterior and posterior cruciate, oriented in the middle of the knee in a cross shape. These ligaments provide some stability. "There is controversy now about how important it is to leave those in when the knee is replaced," Dr. Andriacchi says. "We're looking at patients that have a design with one, both or none of those ligaments left in place."

Early results indicate that patients with a design that allowed for both of those ligaments to be retained were able to climb up and down stairs in a more normal way than patients without their support. Studies of the way that patients walk on level ground showed that none achieved a normal walking pattern after a replacement, regardless of whether they had one, both or none of these ligaments.

If these findings hold true as more patients are tested, it suggests that there are other factors than design of prosthesis that should be looked at more closely in helping the patient to achieve a normal gait.

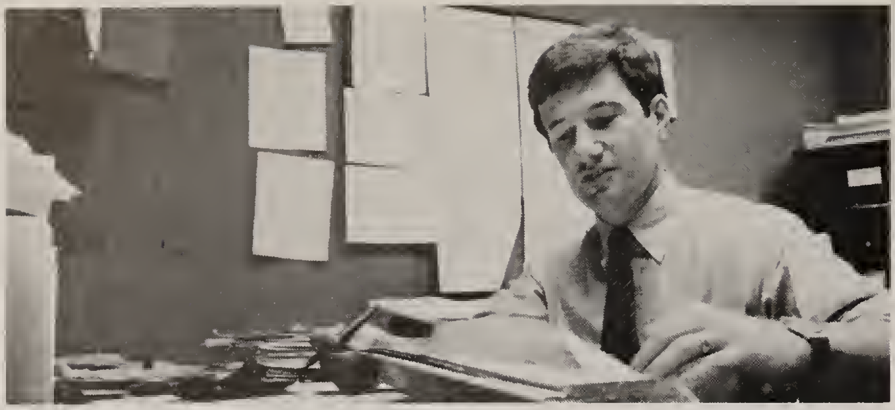
Dr. Andriacchi is also investigating rehabilitation after surgery, since one of the ways of improving a person's walking is by improving muscle strength.

A rehabilitation program is being developed using an electrical muscle stimulator about the size of a pocket transistor radio with wires that are attached to the skin by surface electrodes. The stimulator pulses the muscles at a certain rate, making them contract as they do in exercise, but without moving the body. Such a device is often used by professional athletes to speed up rehabilitation after an injury, but may also have potential in the area of joint replacement.

"It would allow for an exercise program to begin immediately after surgery," Dr. Andriacchi says. "Even if a patient has a heart problem, the device could be used without stress while lying down." He speculates that the use of such a device in combination with a standard physical therapy program would boost rehabilitation.

"We need to find a way of getting a patient's walk back to normal," he emphasizes, "by either changing the joint replacement design or the way patients are rehabilitated.

"Now it could be that it is not possible to get back normal functioning but, given that information, how should we modify the joint



David C. Clark, Ph.D.

replacement design to take into account that they're not going to walk normally? If that is the case," Dr. Andriacchi adds, "we need to know what is the characteristic of their abnormality and how it affects the forces and stresses on the joint."

The replacement design, for example, allows for a certain force to be transmitted from the upper to the lower part of the leg through the joint, assuming that the patient walks normally. But that force may be altered enough that it could affect the life of the artificial knee. One of the current problems with replacement joints is that they may become loose after a certain period of time.

Scientific data is currently lacking in this area but Rush researchers are working to fill the gap.

Depression

Preliminary findings by one of the Department of Psychiatry's studies of depression, headed by Jan A. Fawcett, M.D., the Stanley G. Harris, Sr., Professor and Chairman of the Department of Psychiatry, indicate that a number of stereotypes about older people just do not hold true.

Initial results of a project supported by the Retirement Research Foundation and focusing on older people aged 65-85 run contrary to popular opinion and some scientific thinking, according to David C. Clark, Ph.D., Assistant Professor of Psychiatry and co-principal investigator.

"We're beginning to doubt that most older people walk around more unhappy or even more predisposed to depressive illness than someone who is 30 or 40," Dr. Clark says.

Researchers studied mood, feelings of hopelessness, self-esteem and capacity for pleasure of 70 normal, physically healthy middle class participants who were recruited from a Chicago area senior citizen center.

Results showed that those widowed were no more depressed than those still married; 80-year-olds were no more depressed than those in their 70s or 60s; and those who lived with family, friends or a roommate were not less depressed than those who lived alone. Actual degree of usual social or physical activity also didn't make a difference but subjects with the fewest depressed symptoms felt more physically active. Even though more females described themselves as more depressed than males in the general population, that finding did not emerge in this older group.

"Simply put," Dr. Clark explains, "if you were presented a group of healthy, older people and asked to predict which ones would be a little less happy than the rest, you couldn't. For example, you wouldn't be right to single out those widowed because that stereotype, like many others, simply is not correct."

Furthermore, when this older group was compared to younger people aged 17-62, average scores on psychological tests were the same and the highest and lowest scores were almost identical. "There was no way to distinguish them," Dr. Clark says. "Age did not play an important role in terms of depressed mood, self-esteem or pleasure capacity."

The study is the first in a series to determine whether there is something qualitatively different about depression in a geriatric patient compared to a younger one. And, if so, is the qualitative difference an aspect of the illness or an aspect o being old?

Plans are to expand the stud with another group of volunteer who live independently and the focus on patients in nursing home and in hospitals. First, Dr. Clar explains, more needs to be know about people over 65 who are rarel seen in the hospital before a car ful, sensitive study of the over-6 patient can be designed.

"It's important," says Dr. Clark, "fo us to determine whether there ar unique factors we have to take int consideration to provide the bes possible care for depressed olde people."

High-Risk Mothers and Babies: Responding to a National Problem

By Gail Street-Coe

Despite our nation's overwhelming concern for health care, the infant mortality rate in the United States is 13 deaths per 1,000 live births. While this important statistic has dropped by 11 percent since 1965, it is still nearly twice that of other western countries. Sweden, for example, has a rate of 6.7 deaths per 1,000.

Chicago's infant mortality rate exceeds that of the nation—21 per 1,000 births, making it the third highest in the country after New Orleans (23) and Washington, D.C. (27).

Rush-Presbyterian-St. Luke's Medical Center is playing a major role in the effort to turn such figures around. As a regional perinatal center—one of only 11 such facilities in Illinois with the technology and personnel required to assure a positive outcome for high-risk mothers and their babies—Rush extends perinatal care to patients from a network of 11 community hospitals. Rush's efforts—and those of its fellow perinatal centers—are helping reduce the number of sick and premature babies being born.

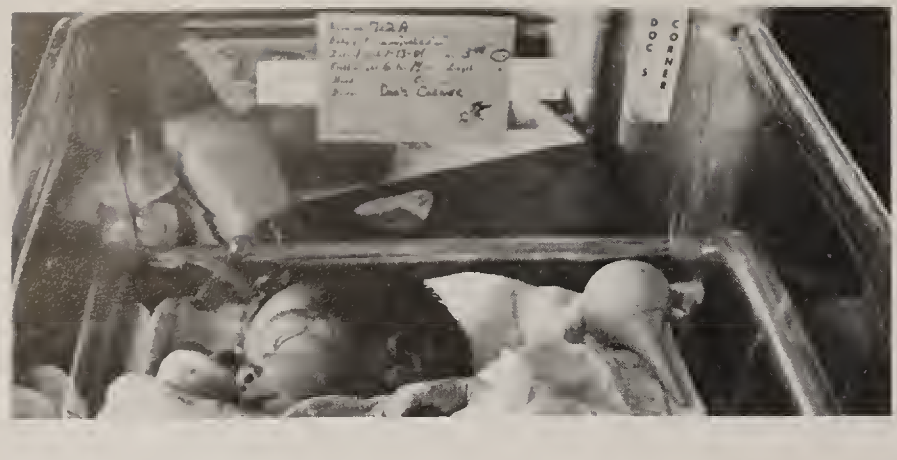
In serving its affiliated network, the Rush Perinatal Center offers consultation services, transport programs, and health services designed especially for high-risk mothers and their babies, as well as educational programs for health professionals already in the field and for students preparing for health careers.

But more than that, the Rush Perinatal Center serves people... as Mary Lee Greenlee can attest.

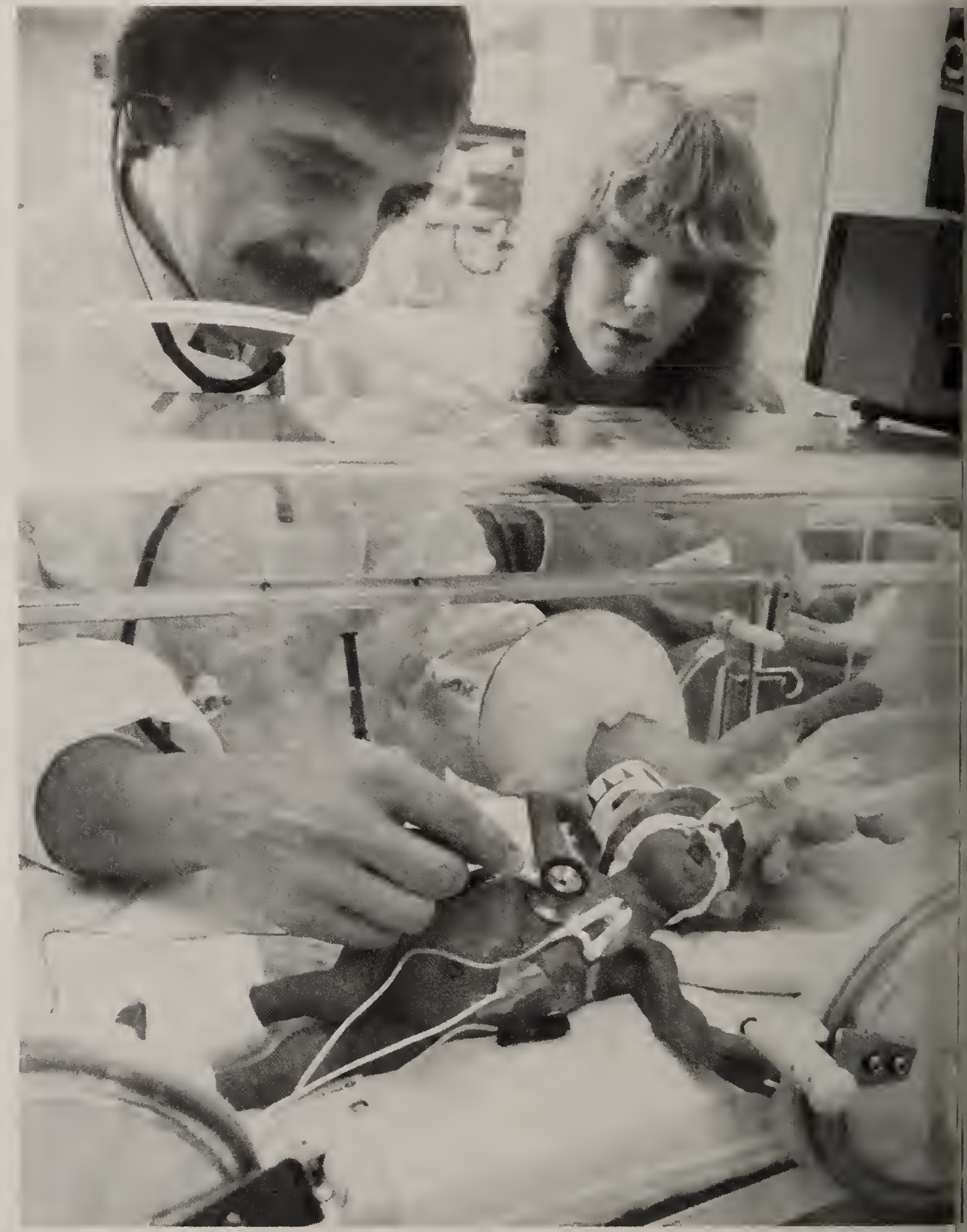
Mrs. Greenlee was 31 when she and her husband Andrew decided it was time to start a family. Three years later they succeeded, but there were problems.

"We were elated when we found out I was pregnant," she says. "But my physician at Rush, Dr. Prab-

and Mrs. Andrew Greenlee with young
drew, their "miracle baby," born eleven
eks early at Medical Center's Peri-
al Center.



Werner Meier, M.D., Co-Director, Perinatal Center, checks new arrival with assistance of Robin Fawcett, G.N.



havathi Nama (assistant professor of obstetrics and gynecology), cautioned me that there was a large chance of miscarriage."

Mrs. Greenlee was 34 and this was her first pregnancy—factors which could have increased her risk of miscarriage or premature labor.

However, these factors did not weigh so heavily on the mind of Dr. Nama as did her medical problems which were present prior to conception.

"From the very beginning my pregnancy was shaky. I had a fibroid tumor that was small and never bothered me, until I became pregnant," explained Mrs. Greenlee. "Then it immediately began to grow."

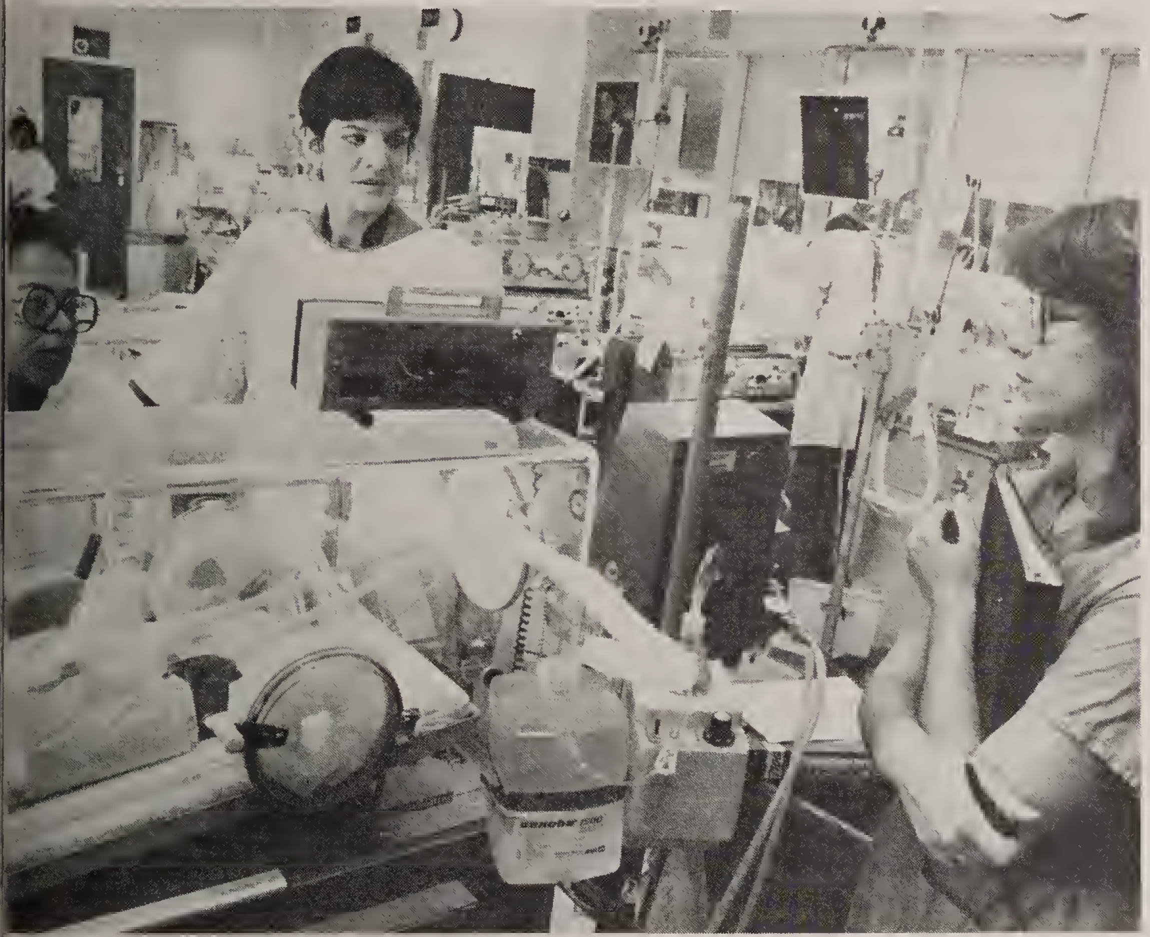
At that point, Mrs. Greenlee became one of the thousands of women in Chicago who are considered high-risk mothers. These women are at increased risk for themselves and their babies, and usually the odds are against having a successful outcome for their pregnancies.

Chicago has a large number of risk factors which can lead to premature births and high infant mortality—lack of maternal education, a large number of teenagers who become mothers and a great number of people without prenatal care.

"Prior to the establishment of regional perinatal centers, there were hospitals in Illinois which had neonatal mortality rates equal to those seen in the 1930s," says Werner Meier, M.D., Assistant Professor, Pediatrics and Co-Director, Perinatal Center. "Mortality rates in some hospitals paralleled the years before antibiotics were known. The reason? They were not prepared to recognize and handle high-risk pregnancies."

In response, the Illinois Department of Health formed a commission to look into the problem and come up with a solution. After three years of study, in 1975, the commission designated six regional perinatal centers in northeaste Illinois. Rush-Presbyterian-S Luke's Medical Center was one these pioneers. It was charged w working with a network of affiliat community hospitals whose obst-rical departments had a combin total of at least 16,000 deliveri annually. The Rush network h now grown to be one of the larg in the state, averaging over 20,0

> *"You can have premature deliveries in people who take all the medical advice and do everything according to the book."*
>
> **Werner Meier, M.D.**



View of the busy Perinatal Center.

ths a year.
Since the establishment of peri-
tal centers the neonatal mortal-
rate in Illinois has dropped 50
rcent, which parallels the expe-
nce of other states which have
lopted the regional system.
The mothers Rush cares for—like
ary Lee Greenlee—are experi-
cing serious complications dur-
g their pregnancies because of
nditions such as diabetes, hyper-
nsion, cardiac or bleeding disor-
rs and premature labor.
With the drop in neonatal mortal-
has come an upsurge in the
mber of high-risk mothers receiv-
g prenatal care.
"Mothers are getting referred to
a lot earlier," says Donald M.
erline, M.D., former Maternal-
tal Medicine Director and Co-
rector of the Rush Perinatal
enter and now Professor and

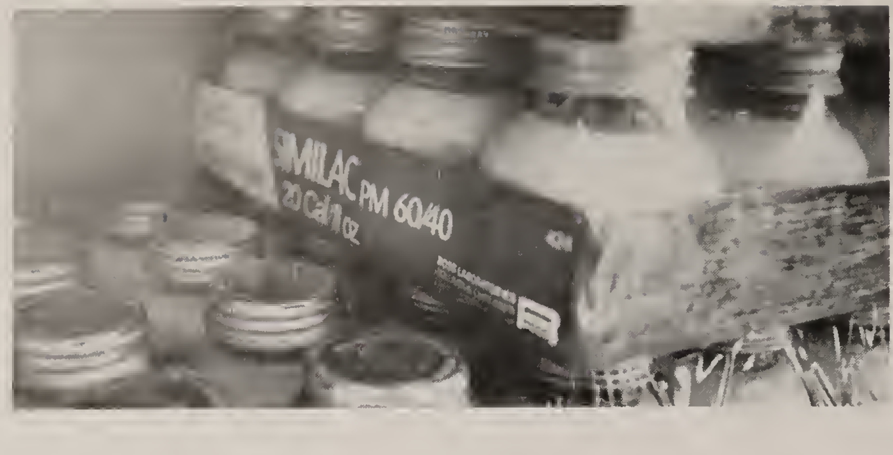
Chairman, Obstetrics and Gynecology, Medical College of Georgia. "The Board of Health is triaging its patients well and rather than seeing them for delivery services only, we're seeing them for prenatal care as well." Patients include those whose physicians are on staff at Presbyterian-St. Luke's Hospital (PSLH) and those transported to PSLH from community hospitals in the network.

Patients are transferred upon the recommendation of their own physician and a physician at Rush. This transfer may occur either during prenatal care or after admission to the community hospital. If a patient's condition is too critical, or she is in labor, a team of physicians and nurses from PSLH will go to the community hospital to handle the high-risk delivery. Once stable, the patient is transported to PSLH for care.

What happens when an expectant mother is admitted to the Perinatal Center? "Treatment may vary from bed rest to intensive drug therapy. The care of each patient is tailored to the particular risk factor involved," says Dr. Sherline.

During this time an obstetrician who specializes in maternal-fetal medicine carefully calculates when the baby should be born. The doctor must determine how long the baby can remain safely in the womb.

"If the mother's medical problems can be managed, then the baby can stay in the womb. We try to keep the fetus in the womb until its 37th week. At that time the infant will be as physically developed as a full-term baby of 40 weeks. But with new technological advances in neonatal medicine, even a 30-week fetus has a good chance of survival,"



Pat Naughton, R.N., Follow-up Program Coordinator, measures head of infant in nursery.

explains Dr. Sherline. "Below that, however, we are dealing with a very high-risk baby."

A fetal monitor is used to check the heart beat of the fetus and ultrasound tests determine its size. As long as the mother's condition remains stable and the monitors show the fetus doing well, physicians can maintain it in the womb. But when these factors change, the baby must be delivered. This is what happened in Mrs. Greenlee's case.

Mary Lee Greenlee's pregnancy was followed closely by her physician. At times she did so well, she was taken off the high-risk list. Then another setback, such as a kidney infection, would make her high-risk again. The ups and downs of the pregnancy kept her and her husband either whirling with happy anticipation or reeling from despair.

As time got closer to her due date, Mrs. Greenlee's health improved. The tumor which had previously blocked the entrance of her birth canal, moved up and out of the baby's path. Her doctor told her of the possibility of a natural delivery.

The Greenlees took prenatal classes in preparation for the happy event. Mrs. Greenlee stopped working.

Three weeks later, on July 23rd, she felt a contraction. Her amniotic sac broke, and she was rushed to Presbyterian-St. Luke's Hospital. Her baby wasn't due until October.

"I wasn't really nervous until I got to the hospital. Then it dawned on me this was serious," says Mrs. Greenlee. "I was scared!"

"You can have premature deliveries in people who take all the medical advice and do everything according to the book," explains Dr. Meier. "There will always be a certain level of premature deliveries. At this time, however, great effort is being made to stop early labor."

"The staff encouraged us and explained they would keep the baby in me for as long as possible," sa
Mrs. Greenlee. "So I settled in fo
long hospital stay."

But the next day, after taking
trasound tests, Mrs. Greenlee w
told they would have to take t
baby soon. They could not ke
him in the womb more than

> *"When a premature baby is born it is generally a surprise to everybody. Parents are in shock... There will be a real sense of crisis."*
>
> **Rev. George Fitchett, D.Min.**

Discussing care procedure (from left) Sharon Mancini, R.N., and Dawn Reimann, R.N., assistant head nurse, Special Care Nursery.

ours without risking infection for er and her baby.

"Medically, I didn't know what an arly delivery meant, but from what ttle I did know, I knew seven onths was awful soon for my baby be born," says Mrs. Greenlee. nd I was afraid that he would not urvive."

Before delivery further complica- ons occurred. Physicians calcu- ted the baby weighed just over ,000 grams, a critical weight in the remature infant. It was also in a reech position. A Caesarean sec- on was necessary.

"All of my dreams and hopes went own the drain. I didn't want a -section. I wanted to experience ll of the things that go along with otherhood including a fat, healthy aby," says Mrs. Greenlee. "I never had labor, just one contraction before my water broke and my baby was only seven months gestation. All I could do was wait and pray."

Because she was scheduled for surgery, the nurses arranged for the Greenlees to take the Caesarean birth class right in the labor room. That cleared the way for Mr. Greenlee's presence during the birth.

July 25th, Andrew Greenlee was born at 29 weeks gestational age—eleven weeks early; he weighed 1,180 grams—two pounds nine and a half ounces. Without the special care his mother had received, he might not have made it into the world. Now—the second phase of the Perinatal Center's work began ...seeing that Andrew had the care he needed to survive...and thrive.

Immediately after birth, Andrew was whisked away from labor and delivery to the intensive care unit of the special care nursery.

But even before Andrew arrived, a team of perinatal specialists had been alerted that a baby just over 1,000 grams was to be born. The team includes a neonatologist (pediatrician specializing in the care of prematurely born infants), neonatal nurses, respiratory therapists, laboratory technicians, a social worker and clergyman. Each has a different job to do following a premature birth.

"If things go as they should, we would have already known that this baby was coming prior to his birth, so we can have the appropriate people in the labor and delivery room," says Dr. Meier. "The first five minutes of life for these babies is critical. They need proper oxygen and temperature control. If things are not handled properly, the consequences can last the rest of their lives."

Sue Lisicich, R.N., Special Care Nursery Transport Coordinator, also has an important part in the drama. "I need to know the mother's medical history to determine if the baby might have problems other than those relating to prematurity," she says. "A lot of things must be taken into consideration including how many hours before the baby was born the mother's water sac broke. The baby may have an infection from exposure in the womb."

For Reverend George Fitchett, D.Min., Associate Professor, Religion and Health, the job is dealing with the parents. "When a premature child is born, it's generally a

Sue Lisicich, R.N., (right) special care nursery transport coordinator, helps rush premature infant in transport isolette from plane at Meigs Field to waiting ambulance for trip to Perinatal Center. Physician and nurse accompanying infant from Memphis are at left.

surprise to everybody. Parents are in shock; they do not really know what to do next. There will be a real sense of crisis and often the chaplain has to be ready to spend hours with them."

Leslie Pionke, M.S.W., Department of Social Work, doesn't usually make contact with the family until some time after the birth. "I probably won't see the parents for a couple of days, at least until the mother is feeling better," she says. "Then I will want to know what type of support is available to her. The family will face a great many ups and downs during the next few months, and if I can lessen the load in some area, I will try."

While perinatologists (obstetricians who specialize in the care of mothers and fetuses) and the perinatal team are busy with the delivery, nurses in the special care nursery (ICU) are busy getting ready for the baby's arrival.

They quickly go down the list of essentials: a warm isolette (a small enclosed bed that electronically maintains a constant temperature), oxygen, rusch bags for resuscitation, spare air lines, tracheal tubes, temperature probes, monitors, suction equipment, and IV's. Even the tape is cut and hanging from the bed, ready to anchor the bevy of tubes into the baby. The 45-bed Special Care Nursery is the first stop for all premature babies and full term babies who have medical problems. In the past year, 828 babies were admitted to the Special Care Nursery. It encompasses five units within the Perinatal Center: The Intensive Care Unit (ICU) where babies with the most serious problems are cared for on a one-to-one nurse-patient basis; the transitional nursery where babies with initial problems are assessed; the Intermediate Nursery I for babies who do not need the concentrated nursing care of the ICU; Intermediate II for the most stable babies, those getting ready to go home, and the annex, where babies with chronic illnesses or genetic problems are experiencing slow or no recovery.

Because Andrew was 11 weeks premature and weighed less than three pounds, he was taken to the Intensive Care Unit. He was given oxygen to help him breathe. His weight was calculated so the proper amount of fluids and medicine could be administered through IV's. A probe was taped to his body to monitor changes in body temperature. Blood samples were taken fo necessary tests, such as for anemi or blood sugar. An umbilical arteri catheter attached to his navel a lowed lab technicians to chec blood gases regularly. Monitor were attached to check his hea rate, respiration and blood pressur

Andrew was lucky. He was bor in a place that could immediatel take care of his needs. The Speci Care Nursery is only a few yarc away from labor and delivery.

Some babies following birth mu be transferred to the Rush Perin tal Center from as far away a Joliet, Illinois, through the Neonat Transport Program.

Like other premature babies b fore him, Andrew was on the tigh rope between life and death. On day he would be fine; the next da a life-threatening complicatio would arise.

Although Andrew could breath without a respirator, his breathin system, like that of many pr

> *"It's hard for (parents) to understand what's going on... that all the equipment and wires are helping your baby, not hurting him."*
>
> **Judy Friedrichs, R.N.**

oud mother brings her baby to visit nurses Special Care Nursery.

ature infants, was still immature. ften Andrew would become so laxed he would forget to breathe. nis condition is called apnea. /hen it occurred apnea monitors ounded an alarm so that nurses ould immediately remind him to reathe again by gently rubbing his et or arms.

Andrew also suffered from bradyardia, a slowing down of the heart ate. Another monitor checked for is condition. It electronically meaured how fast he was breathing as ell as how fast his heart was beatg and when the heart beat slowed own it would ring and alert the aff.

For his jaundice condition, small amples of blood were continually aken from his heel to be analyzed r a substance called bilirubin. Bilubin appears in the blood when d red blood cells break down. The ver is responsible for taking the ilirubin out of the blood but beause the liver of the premature aby is still immature, it doesn't do is too efficiently. Too much biliubin in the blood gives the baby e yellowish color. Excessive mounts of bilirubin may have a eleterious effect on the nervous ystem when therapies such as hototherapy are employed.

Bilirubin can be decreased by xposing the baby's skin to artifial sunlight. A "billi-light" was laced over Andrew's isolette to hine on his skin. His eyes were rotected from the bright light by oft cotton patches.

"Although we are trying to reeate a mother's womb outside of e mother, we cannot beat the milons of years of experience of nature in doing that," says Dr. Meier. "All we can do is apply all of the technical knowledge and experience we've gained over the last few years."

During the last five years there has been an explosion of knowledge in perinatal medicine. What is considered extremely premature, for example, has changed.

"We are treating babies now that six years ago we didn't have the technology to deal with," says Dr. Meier. "Babies born weighing 1,000 to 1,200 grams have a 90 percent survival rate. Those over 800 grams to 1,000 have a 65 percent chance. 800 grams is a critical weight; when they are that small, their chances of survival drop to 50 percent or less."

Five years ago the average weight of the tiny babies in the Special Care Nursery of the Medical Center was 1,000 grams (two pounds, three and a half ounces). "Now, we are seeing babies of 600 grams (one pound, five ounces), so a two-pound baby doesn't seem that small," says Lisicich. "But a baby that size will require one-on-one nursing care and we can expect him to remain in the hospital at least 10 to 12 weeks if the infant has no major setbacks during the course of treatment."

The handling of premature babies has changed, too. Prior to the development of intensive care nurseries, babies were considered to be extremely premature if they were 1,500 grams (three pounds, five ounces). The survival rate below that weight was extremely low. But with the establishment of special care units, the emphasis on specialized training, and the development of new equipment, the survival rate has improved. Now a 1,500-gram baby is considered a normal premature baby, can be handled routinely and has an extremely good prognosis. Over 90

Respiratory Therapist Cathy Orpett, works with infant in Special Care Nursery. Knitted cap prevents body heat loss.

percent of these babies will survive and be normal.

Perinatal specialists are now dealing with a new population that's harder to work with—"the kilo kids," those who are 1,000 grams (two pounds, three and a half ounces) or less.

To demonstrate the problems of "preemies," Dr. Meier indicated some points of comparison with full-term babies of 40 weeks gestation.

The first thing noticeable about the full-term baby, he said, is his loud and demanding cry. Arms and legs are flexed and there's a lot of fatty tissue. Even if the baby is not feeling well for a few hours, eventually he will stabilize himself. The full-term baby can control his temperature and has periods of alertness.

The first thing you notice about a preemie, Dr. Meier points out, is how tiny he is. A premature infant misses the growth period babies experience during the last few months in the womb, a time when the body weight nearly quadruples. The preemie's skin is so thin you see right through it to the blood vessels underneath. There is not enough tissue or fat to insulate the baby, so he can lose body heat through the skin and become dehydrated in just 24 hours through evaporation. An environment that prevents heat and water loss must be provided immediately after birth.

The premature baby lies flat and moves its arms very slowly in broad, weak movements; muscles aren't yet strong enough to pull arms and legs together. From the isolette you may hear a very weak cry, but usually the premature infant does not cry much.

Finally, the preemie must be reminded to keep breathing. Prior to birth the mother was doing the breathing for him. Normally, after birth all babies begin breathing through their noses. The premature baby breathes faster than the full-term baby, and his ability to breath at regular intervals has not yet developed. He may take several short breaths, then a long breath, and then rest for a few seconds.

Often the lungs of premature babies are underdeveloped since they are one of the last organs to mature. The immature lungs may lac a chemical called surfactant, whic results in respiratory distress sy drome (RDS) or Hyaline membran disease. The baby with RDS need help expanding his lungs and ge ting the exchange of oxygen an carbon dioxide working properl Oxygen, humidity, medication a a respirator can provide this help.

"The sucking, swallowing and ga reflexes are not yet developed the premature infant. He must b fed through an N/G tube (nas gastric tube), a very small, long so plastic tube which goes through th nose and down into the stomac

"A mother may consider her baby to be three months old, but if he was eleven weeks early he is only two weeks old developmentally."

Pat Naughton, R.N.

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ys Dawn Reimann, R.N., Assist-
t Head Nurse, Special Care Nur-
ry. "Before every feeding the tube
checked. The nurse also must
eck for undigested milk left in
e baby's stomach from the last
eding. As the baby grows and de-
lops, he will gradually be given
s feeding by breast feeding or
ople."

The caloric demands and re-
irements of a premature baby are
ormous. Adults need 30 calories
r kilo (two pounds, three ounces
weight) to maintain weight. A
emature baby grows so fast he
eds 120 calories per kilo. A 1,500-
am baby would need 180 calo-
s and would require a feeding
ery two hours to get the calorie
ake needed to maintain his pres-
t weight and growth. Because of
is, physicians prefer to feed these
bies breast milk.

"The milk from mothers of pre-
ature babies is different than that
the mother of a term baby," says
. Meier. "It's more suited for the
owth of the premature infant. We
pplement the milk with special
rmulas and IV's containing
tamins."

But the care for premature infants
volves no certainties. Neonatolo-
sts often have to make difficult
de-offs.

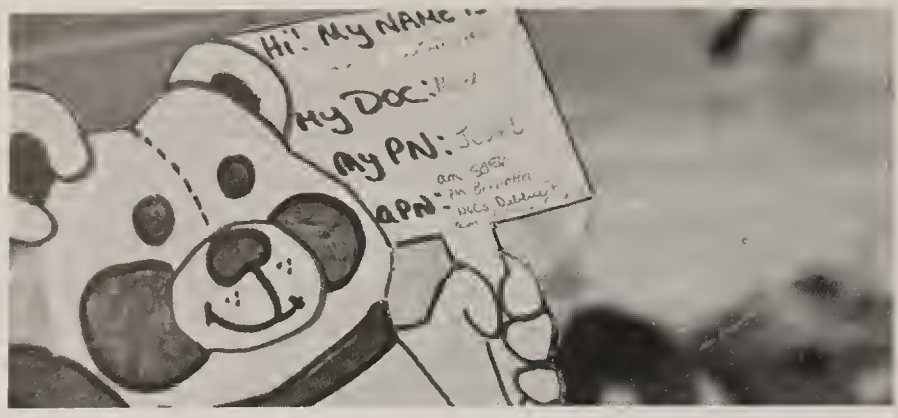
Life-giving oxygen can produce
trolental fibroplasia (RLF), an
e condition which may result in
loss of eyesight. Increased liquid
edings to offset weight loss after
rth and promote proper weight
in may mean a build-up of body
ids, placing strain on the heart
d lungs. Using diuretics to reduce
is build-up risks dehydration.

"Certain things can help in one area yet hurt in many others. This is something that we must be extremely careful about all the time," says Dr. Meier. "Whenever we start a medication, we have to look for complications. We may be producing a short-term benefit, but we must also be concerned with long-term effects."

While Andrew's condition was being assessed, treated, and stabilized, his mother, Mary Lee Greenlee, was recuperating from the Caesarean-section surgery. Although she was awake during the operation, it wasn't until three days after Andrew's birth she was able to see her son.

Those three days are described as a "traumatic time" by Mrs. Greenlee.

dy Friedrichs, R.N., inservice coordinator,
rinatal ICU, (left) assists new mother in
ring for her premature baby.



"It was an unusual feeling having your baby taken away from you. Part of me knew I had a baby, but I didn't go through all of the things that go along with having a baby. There I was very round and pregnant one day. The next day I was empty, left with nothing to hold in my arms," she remembers.

"I was sharing a room with another mother. She had her baby and I didn't have mine. So it was hard to assimilate that I was really a mother. All I had was what people told me, since I had never even seen Andrew."

Prematurity is not just a medical issue, but an emotional one as well. Parents of infants whose lives are hanging by a thread need as much emotional help as their babies need medical attention.

"Mothers begin to wonder 'What is it that they aren't telling me?'," says Judy Friedrichs, R.N., Inservice Coordinator, Perinatal ICU. "It's hard to understand what's going on ...that all of the equipment and wires are helping your baby, not hurting him."

When Mrs. Greenlee was finally able to see Andrew, she remembers she had never seen anything like it.

"He had a tongue depressor for a splint," she said. "His arm was all bandaged. There were tubes down his nose, wires on his chest and tape all over his face."

"The first week is a shock," Friedrichs explains. Parents must get over the loss of that 'Gerber baby' image that they had in their minds."

Another shock came the day Mrs. Greenlee was ready to be discharged without her baby.

"While I was in the hospital, I knew I had a baby. I felt like a mother. When I came back home, the house was like I'd left it," she says sadly.

Staff provides special counseling for each mother who must leave her baby in the Perinatal Center. They are prepared for the fact they should expect to feel sad and depressed on the day of discharge.

"The mother leaves without her baby. There's no excitement at home. Relatives aren't there to greet you and see the new baby. It's a quiet occasion," says Friedrichs, "and a very lonely time for the mom and dad."

Once the mother goes home parents are encouraged to visit and call the nursery. There is 24-hour visitation for parents and grandparents. Nurses are available to answer questions any time of the day and night.

"I found the staff most supportive. If I asked questions they'd be more than happy to explain. They encouraged us to take over and become more involved with the baby and his care," says Mrs. Greenlee. "In the beginning the nurses changed his diapers and put on his clothes, but right away they encouraged us to take over and do that."

Mrs. Greenlee visited the nursery every day during Andrew's two month stay. Her day wasn't complete, she recalls, until she saw him. Her husband, a Chicago police officer, made two trips to the hospital a day; one to bring his wife's breast milk, the other to bring his wife.

But as the time wore on, and Andrew's stay was more than one month, depression set in. Nurses in the unit noticed the change in Mrs. Greenlee's normally cheerful disposition and recommended that she and her husband join the Parent to Parent Group.

Social Worker Leslie Pionke, M.S.W., helps arrange support for parents.

"I was depressed. I felt cheated, cheated of my pregnancy, cheated of the natural birth process and cheated of not being with my baby," Mrs. Greenlee explained. "At the parents' group meeting I got the chance to talk about my feelings. I was glad we went."

During each meeting, parents receive counseling from specially-trained nurses, social workers and chaplains. They also receive support from parents who have successfully gone through the experience and who bring their healthy children to show the other parents that things do turn out right.

All parents are given a chance to join the group, or they can elect to have a "graduate parent," one who has had a child in the nursery, work with them. The new parents and graduate parents are matched according to the area where they live, the weight of their children at rth, and the complications expe- enced during each baby's hospi- lization. The graduate parent alls the new parents at least once week and talks with them about eir concerns and questions.

In addition the Perinatal Center sues a newsletter, "The Neo ews," to parents whose babies are the nursery. In it guest writers lk about medical advances in erinatal care, discuss emotional is- ues parents face, and offer con- umer advice for new parents.

Nurses in the Perinatal Unit are so alert for any important infor- ation resulting from a conversa- on with a parent, giving clues to roblems the parents are experi- ncing. It was in this manner a nurse iscovered Mrs. Greenlee's breast ilk had stopped flowing. She was mmediately referred to a nurse oing research on breastfeeding. he gave Mrs. Greenlee nutritional ps to help increase the flow and upplied the name of another other having the same problem, o that a comforting relationship re- ulted as well as an endless flow of ilk for Andrew.

As Andrew's medical problems ere solved and he started to grow, e graduated from the ICU to the termediate Care I and II nurser- es. In anticipation of his discharge, e Greenlees were taught every spect of Andrew's care and he was nrolled in the Special Care Nur- ery Follow-up Program for babies eighing less than 1,200 grams two pounds, ten and a half ounces) t birth. These babies run the high- st risk for developmental delays.

Director of the Follow-up Pro- ram is Mary Ellen Bozynski, M.D., neonatologist and assistant ttending physician in pediatrics. he follow-up team is equipped to andle most medical problems and includes a neonatologist, nurse coordinator, developmental psychologist and two physical therapists who specialize in neurodevelopment. Other specialists, such as a neurologist, ophthalmologist or orthopedic surgeon, are available depending on the baby's needs. Regular check-ups for each baby occur every four months.

Barring severe medical problems due to internal bleeding and trauma, a premature infant's biggest hurdle seems to be delays in mental and physical development.

"A mother may consider her baby to be three months old, but if he was 11 weeks early he is only two weeks old developmentally," says Pat Naughton, R.N., Follow-up Program Coordinator. "This is called the corrected age, the development level at which the baby should be according to capabilities rather than chronological age." The corrected age is determined by an examination, the Dubowitz Exam, performed shortly after birth.

"For the first two years we have to correct for their prematurity," says Naughton. "After two years the infant should be developmentally comparable to an infant born at full-term.

"Look at Andrew Greenlee. He weighed less than three pounds when he was born and was 11 weeks early. In other words, he had 11 weeks of development to make up for in the first two years. Now at one year of (corrected) age, he weighs over 25 pounds."

Andrew does have some motor problems, but they were detected early through the Follow-up Program and are being treated through physical therapy. Mrs. Greenlee has also learned exercises to help Andrew's development. This kind of therapy enables most infants with these problems to outgrow them.

The follow-up program was started in 1980 and since the oldest participants were just two years corrected age in May, 1982, the results of their development are only beginning to be compiled.

"It's hard to determine why some babies are delayed and others aren't," says Naughton. "That's why the follow-up program was established."

For the Greenlees, the Perinatal Center and its staff are part of the positive experience which brought them closer together and made them appreciate life more.

"The support of the staff turned what could have been a very negative experience into something very positive," Mrs. Greenlee says. "We no longer take things for granted. To us, Andrew is our miracle."

Imaging Techniques

By Janis Long Harris

It was late on a Friday afternoon in 1895 when Professor Wilhelm Conrad Roentgen, professor of physics at the University of Wurzberg, discovered x-rays. Medicine was never the same again. Incredibly, physicians were now able to penetrate the barrier of skin and flesh to see inside the body. What was previously invisible was made visible. A revolution took place in medical diagnosis.

Today, almost a century later, a new revolution is underway. Advances in imaging technology are enabling physicians to see inside the body more clearly and in new ways, providing more information than was ever before possible. There have been improvements in conventional x-ray systems with the advent of digital radiography and new interventional methods. Altogether different kinds of images are being made with CT scanning, ultrasound and nuclear medicin And on the horizon are even newe forms of imaging, such as nuclea magnetic resonance.

Through these advanced techniques, physicians are now able t see every organ in the body an tell a great deal about how the work. They can make diagnose and perform treatments that previously would have required hosp talization or surgery.

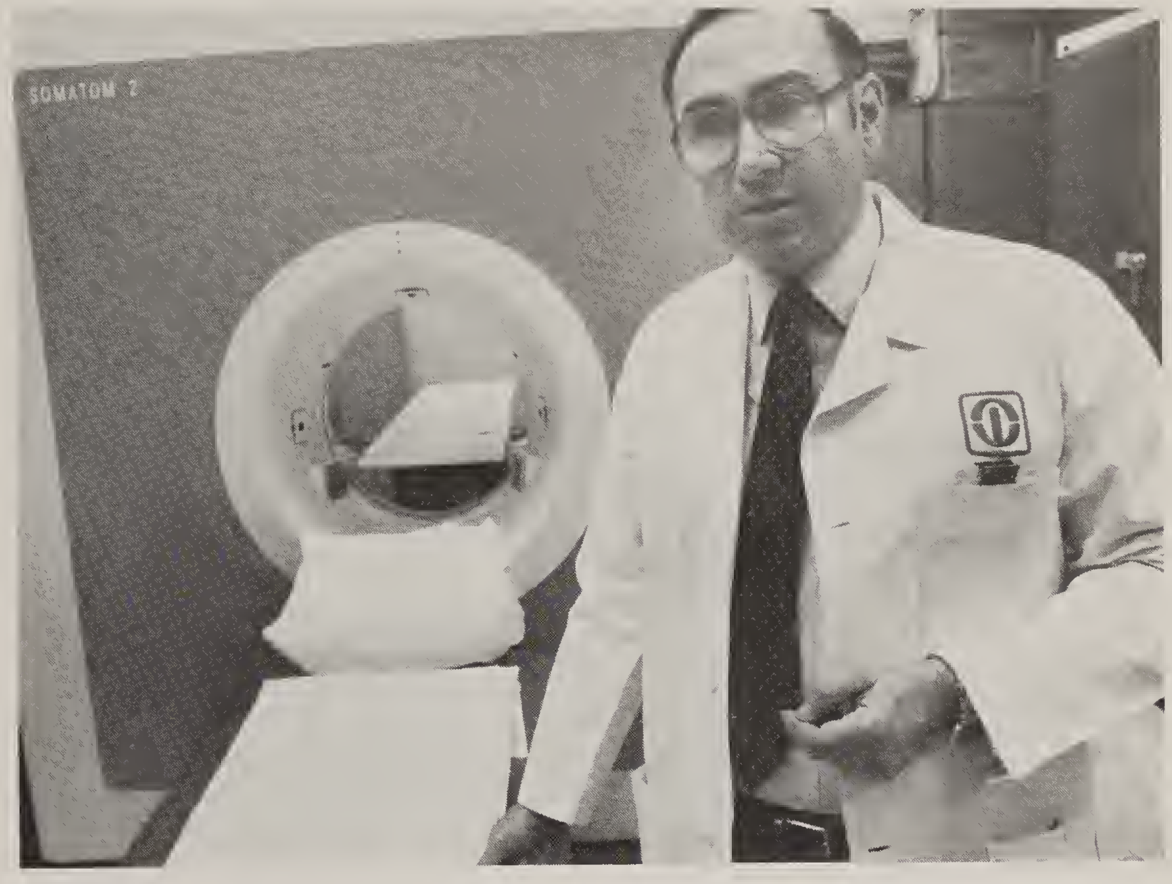
One machine that has contributed to the imaging revolution i the CT scanner.

When introduced in the mi 1970s, it was hailed by *Scientifi American* as a revolutionary advance "comparable to that brough about late in the 19th century b the introduction of anesthetics an sterile technique." The CT scanne has enabled physicians to see inside the body in a way they neve could with conventional x-rays. Th

Ultrasound is one of newer imaging techniques involving no radiation. Note image on screen of equipment.

"The first... body scanner took 18 seconds to collect data and another 50 seconds to reconstruct the picture ... The new scanner scans in three, five or ten seconds..."

Jerry P. Petasnick, M.D.



rry P. Petasnik, M.D., with Medical Center's ewest CT scanner.

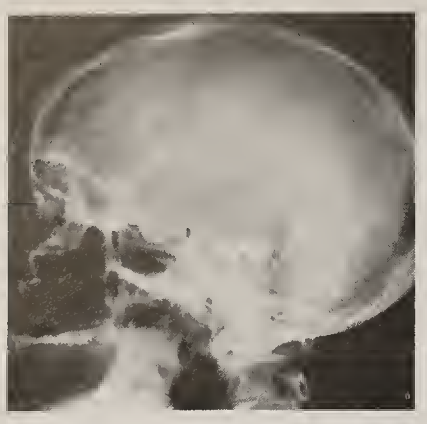
eed for invasive and surgical proedures has diminished because f the ability of CT scans to show lices of tissue—organs, bone, ases and blood—in cross section.

Rush-Presbyterian-St. Luke's was ne of the first institutions to acuire a CT scanner. It purchased e third EMI head scanning unit in e country in 1973 and one of the rst CT body scanners in the couny in 1976, about the same time at a second head scanner was cquired. Now, a new body scaner, the Siemens Somatom 2, has een installed in place of the origial. According to Jerry P. Petasnick, .D., Professor, Diagnostic Radiolgy and Nuclear Medicine, the new canner can "do all the things that eople are talking about—very recise location of abnormalities nd a lot of new applications.

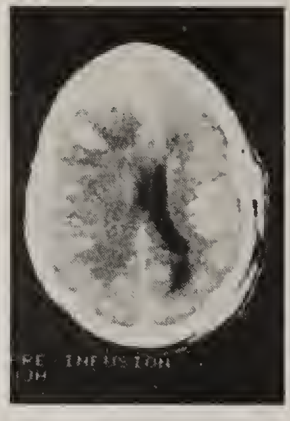
"CT scanning has changed," he ays. "The newer units have a very igh resolution and they're very fast. he first head scanner took five inutes to make a single picture; e body scanner took 18 seconds collect data and another 50 secnds to reconstruct the picture from omputer. The new scanner scans three, five or ten seconds, deending on how much information ou want, and the picture is recontructed almost immediately."

Faster scanning is important for everal reasons. It eliminates disortions due to patient motion since atients don't have to lie still for as ong. An abdomen scan takes 15 inutes with the new scanner,

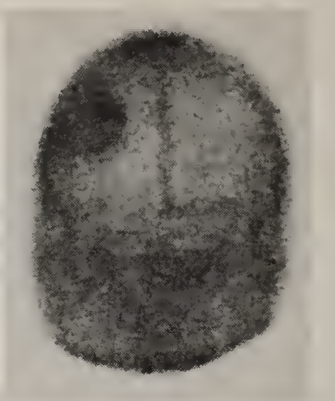
The CT scanner not only produces images but allows manipulation of data once scan is completed.



Conventional x-ray of skull does not show brain or structures within the brain.



CT scan shows brain, fluid within the brain, and blood clots within the brain (white areas).



Nuclear medicine scan shows abnormal areas of blood circulation (black area) in the brain. These scans often show changes in function before changes in structure become apparent in x-rays.

Michael F. Huckman, M.D.

compared to about 45 minutes with an older model. Faster scanning also means more people can be scanned in a shorter amount of time.

Not only is scanning faster, but physicians are looking at areas they hadn't been able to see with the old scanner. Such areas include the neck, larynx, salivary glands, and fine structures of the inner ear. The new scanner also is able to diagnose herniated discs of the spine and tiny tumors of the pituitary gland, which the old scanner was unable to do.

"The new scanner can distinguish between smaller differences in densities of tissue than could the old scanners," says Michael S. Huckman, M.D., Professor, Diagnostic Radiology and Nuclear Medicine, and Neurological Sciences. "Now we can enlarge any portion of a scan and focus just on that area."

The greatest advances in CT scanning, however, have been in the computer's ability to manipulate data once a scan has been done.

Dr. Huckman explains, "We can do a scan in an axial plane and it will look like a horizontal slice. If we do more scans and stack them one on top of the other, we can then ask the computer to reconstruct the data and show us a slice from another perspective."

In addition, CT scanning has now gone from static to dynamic imaging—it is now possible to follow blood flow through organs or tumors, something that was previously only possible with nuclear radiography or arteriography.

Nuclear radiography is a technique that determines how well an organ is working, not just how it looks. "It has to do with physiology, instead of anatomy," says Ernest Fordham, M.D., Professor of Diagnostic Radiology and Nuclear Medicine, and Director of the Section of Nuclear Medicine. Dr. Fordham explains that nuclear scanning involves the external detection of nuclear materials which have been inhaled, swallowed or injected into the body. Different radioactive materials attach themselves to different organs, and by watching the flow of these materials through the body and the uptake by targe organs, physicians can determine whether physiological abnormalities exist.

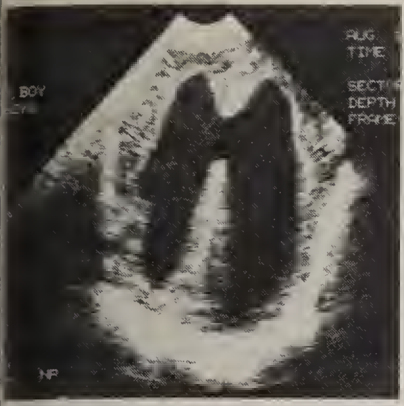
Nuclear medicine came into its own in the mid-60s and experienced rapid growth in the early 70s with the development of more practical radioactive materials.

"The Medical Center got a heac start in the specialty in 1968, wher we acquired the first nuclear tota body scanner in Chicago," Dr Fordham says, "about four years before others got involved in this area

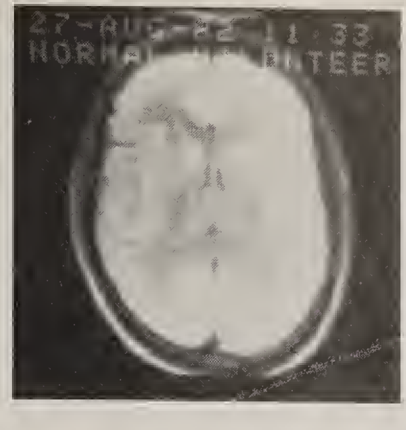
Since that time, nuclear medicine, like CT scanning, has beer refined and improved.

"In order to obtain better qualit images, you have to either use mor radiation, or the same amount o radiation with greater efficiency says Dr. Fordham. "With the advances that have been made, we now get far better images with th

Ernest Fordham, M.D., (left) in nuclea medicine scanning area.



Ultrasound scan shows dilated fluid spaces (black areas) indicating diagnosis of hydrocephalus. Since ultrasound does not penetrate bone, scan was made by looking through soft spot in a baby's brain.



Nuclear magnetic resonance (NMR) scan shows differences in gray and white matter in brain, without use of x-rays. Although this scan shows normal brain, NMR also shows presence of some diseases, such as multiple sclerosis, which do not show up well with CT scans. (Slide by Technicare)

same or reduced doses of radiation.

The continuing quest in nuclear medicine is for new radioactive materials and improved instruments to use as detectors. And, as manufacturers develop new technology, prototype equipment must be tested. In many cases, that equipment is tested at Rush-Presbyterian-St. Luke's.

"Manufacturers often bring prototype equipment here for testing," explains Dr. Fordham, "and on the basis of our clinical testing, they may manufacture, modify or drop a particular prototype."

Why do manufacturers come to Rush to test their equipment? Possibly because the Section of Nuclear Medicine at Rush is not only a leader in the area of whole body imagery (the section recently finished a two-volume, 1,700 page atlas on the subject) but is known across the country for its work with bone scanning.

With six scintillation cameras and one tomographic scanner, the department currently does about 12,000 nuclear scans a year. "Soon," says Dr. Fordham, "we will acquire a rotating camera which will produce images in cross section similar to CT scans." Such pictures will allow for comparison of nuclear and CT scans in the same plane.

The ultimate goal of all imaging specialists is to obtain more and better information with the least possible radiation. Ultrasound is potentially one of the most exciting imaging techniques, because it requires no radiation whatsoever. It also shows details which cannot be seen with radiation imaging methods.

In ultrasonography, sound waves are directed into the body by a microphone-like transducer. When these waves bump into structures deep within the body, echoes are reflected back to the body surface where they are picked up by the transducer and electronically converted to a picture.

Ultrasound is particularly useful for diagnosing gynecologic problems, looking at the liver, gallbladder or kidneys, and for identifying many problems of pregnancy. Some of the earliest uses of ultrasound were to predict multiple births and abnormalities of the head and spine. More recently, this method has been refined for detecting a wide range of anomalies, to tell how a fetus is growing and even to indicate when a fetus is sick and needs to be delivered. One form of ultrasound, called echocardiography, uses sound waves to examine the heart.

According to Suresh K. Patel, M.D., Associate Professor, Diagnostic Radiology and Nuclear Medicine, the advantages of ultrasound include the fact that it involves no radiation, takes very little time (less than three minutes to produce an answer), is portable and, under appropriate conditions, very precise.

"We can now pick up most fetal abnormalities in the first 20 weeks of pregnancy, diagnose gallstones with 98 percent accuracy, or tell whether an abdominal mass is solid or cystic in about two minutes," says Dr. Patel.

Rush recently acquired advanced ultrasound equipment which uses multiple transducers and very high frequency sound waves to produce not only better images than have been possible before, but the appearance of real time motion. Now ultrasound, like CT scanning and nuclear medicine, is able to look at moving parts within the body.

Ultrasound does have limitations, as Dr. Patel points out.

"Ultrasound is very difficult to use with people who are overweight, because sound beams can't penetrate many layers of fat," he says. "The same is true for patients with large amounts of gas, since sound is reflected by gas. Ultrasound is also unable to penetrate bone."

Because each of the various imaging techniques has advantages and disadvantages under certain conditions, it's important to know when to use a particular technique.

Suresh K. Patel, M.D., performs ultrasound test on patient. Image appears on screen above right.

"A conventional x-ray won't show early cancer of the bone," points out Richard E. Buenger, M.D., Chairman of the Department of Diagnostic Radiology and Nuclear Medicine. "CT will show it a little sooner, but a nuclear medicine bone scan will show it first—it shows chemical changes before there are any visible changes.

"But if a patient has pain in the bones and a nuclear scan is positive, that doesn't tell you *what* is going on. An x-ray would show whether it's an infection or a tumor, for example."

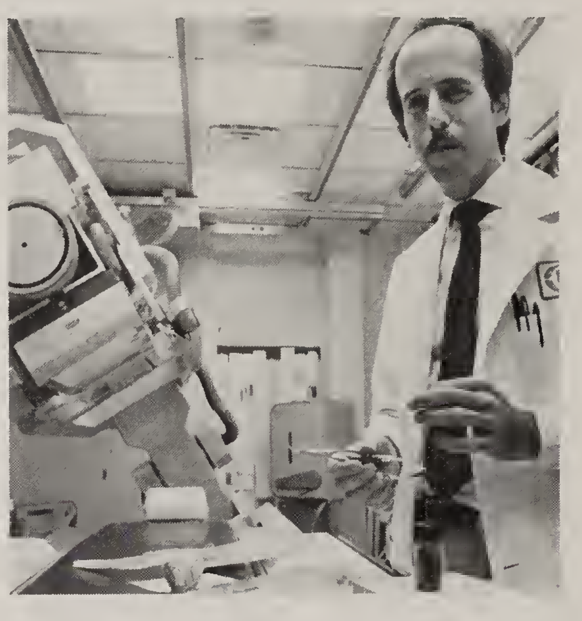
Often, several imaging techniques are necessary to solve a particular diagnostic mystery.

Take, for example, a patient who has jaundice. A nuclear scan may show an enlarged liver, which could mean cirrhosis, hepatitis or bile duct stones. A CT scan is done and shows a tumor in the pancreas and dilated liver ducts. Ultrasound is then used to locate the dilated ducts so that a needle can be put in to drain them and relieve the jaundice.

The use of imaging techniques to treat lesions that have already been diagnosed (as in the use of ultrasound to drain the liver ducts in the above example), is part of a new area called interventional radiography.

Interventional radiographers use CT and ultrasound to guide placement of tubes, needles and catheters used to dilate narrowed arteries, drain abscesses, and to inject various materials to cut off blood flow to tumors and block arteries leading to aneurysms or arteriovenous malformations.

According to neuroradiologist Eric J. Russell, M.D., Assistant Professor, Diagnostic Radiology and Nuclear Medicine, these techniques often may be the treatment of choice, particularly when surgery is considered too dangerous an option.

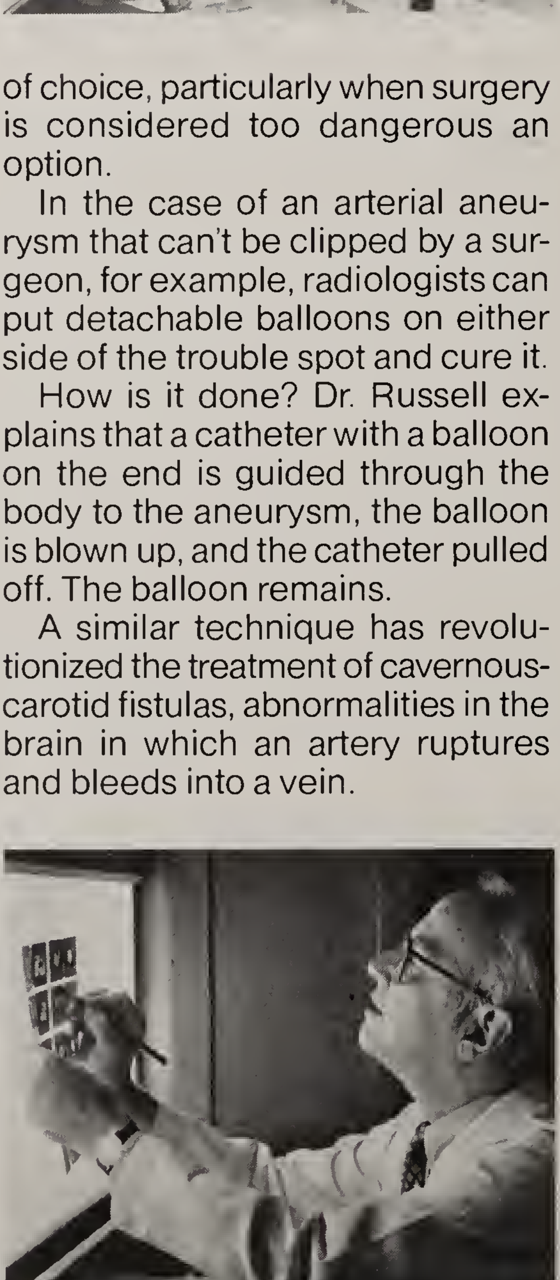


Eric J. Russell, M.D., displays equipment used in interventional radiology.

In the case of an arterial aneurysm that can't be clipped by a surgeon, for example, radiologists can put detachable balloons on either side of the trouble spot and cure it.

How is it done? Dr. Russell explains that a catheter with a balloon on the end is guided through the body to the aneurysm, the balloon is blown up, and the catheter pulled off. The balloon remains.

A similar technique has revolutionized the treatment of cavernous-carotid fistulas, abnormalities in the brain in which an artery ruptures and bleeds into a vein.



Richard E. Buenger, M.D., Chairman Department of Diagnostic Radiology and Nuclear Medicine.

"In the past, many surgical procedures were used to try to tie off the artery leading to the fistula," says Dr. Russell, "but they often were not successful. It's very difficult to operate directly on that area. But with the balloon technique, we can usually cure the problem without surgery. While the balloon may eventually deflate, the body has had time to close off the fistula hole and it tends to remain closed."

Radiologic techniques are also used to block off blood flow to tumors. Adhesive material or tiny particles can be directed into the appropriate vessel until blood supply is cut off. This is done as a preoperative procedure to reduce blood loss during surgery and in some cases, to cause partial tumor death.

The advantage of interventional radiography: since no surgery is required, there is no incision and therefore less chance of inflammation—only a small puncture in the groin where the catheter is inserted.

"There are dangers as in any therapeutic procedure," says Dr. Russell. "You have to know the arterial structures very well and how to avoid the danger spots."

The imaging revolution is still going on. Still new techniques are being developed that not only produce excellent pictures, but do so even more safely than some of the most readily available technology.

Although the dangers of pushing a catheter through the arteries is limited, even that risk is eliminated with a new technique called digital subtraction angiography (DSA). DSA involves an intravenous injection of contrast material into an artery, followed by computer enhancement of the images produced. The procedure is used primarily for determining whether an artery leading to the brain is clogged with a deposit of fatty material called plaque, which can lead to stroke. The procedure produces a clear picture within a few minutes.

Yet another technique that is generating excitement within the imaging field is nuclear magnetic resonance (NMR). NMR is a method of producing images which does not require x-rays or injections of radioactive materials.

Instead, supermagnets and radio signals are used to create images that may be superior to anything currently produced by CT scanners, ultrasound and other available techniques. It is thought that NMR will be particularly useful in looking at soft tissues in the body and in distinguishing between gray and white matter in the brain. And since there are no known health hazards associated with magnetic fields and radio signals, NMR is presumably a safer technique than those which involve x-rays. However, as Dr. Huckman warns, "no one really knows the long-term effects of high intensity magnetic fields on human tissue."

The options within the imaging field are expanding. The techniques already available are continually improving. The medical world is without doubt experiencing an imaging revolution. As Dr. Fordham observed, "things are going 'poof' right now. What's within our grasp is truly amazing."

Imaging Advancement: Fetal Surgery

Refinements in ultrasound technique and technology have not only made decided fetal assessment possible, but surgical intervention as well.

Jason C. Birnholz, M.D., Professor of Radiology and Nuclear Medicine, and Director of the Section of Ultrasound, is a pioneer in fetal surgery. He recently joined the Medical Center faculty, having previously headed the obstetrical ultrasound section at Brigham and Women's Hopital (Harvard Medical School), Boston. There two years ago he participated in the first ever fetal-brain surgery procedure. Using ultrasound to guide them, he and Dr. Frederic Frigoletto, a perinatal obstetrician, inserted a needle into the brain of a 24-week old fetus to draw off excess cerebro-spinal fluid.

Since that time several other clinicians across the country have performed similar aspirations and have even implanted small shunts to provide continual fluid drainage from a blocked organ. Recently Dr. Birnholz and Frank Merrick, M.D., Assistant Professor of Obstetrics and Gynecology (ANCHOR), cooperated on a procedure to relieve a kidney blockage in a 28-week old fetus, the first such intervention performed at the Medical Center. And Dr. Birnholz predicts more such procedures:

"There are many things we can identify by scanning," he said. "We aim at three target questions: are there congenital anomalies? Is the fetus growing normally? Does fetal condition seem to be satisfactory?"

Although many of the patients he sees are referred because a problem is already suspected, Dr. Birnholz thinks that ideally all patients should be scanned two or three times during pregnancy. "The first scan would be at around 20 weeks for establishing fetal age and detecting anatomical problems; the second at around 30 weeks for fetal growth, and the final scan near term for planning labor."

Dr. Birnholz acknowledges not all is known about the possible long-term adverse effects of fetal ultrasound scanning, but he suspects they are minimal from studies published or in progress. Perhaps the more thorny dilemma is not one of unknown side effects but one of ethics, when an unsuspected problem is discovered and its long-term effects are unknown. When should therapy, which may be risky, be started and when should nature be allowed to follow its course? What are the legal and moral rights of the fetus during procedures, and how may they conflict with parental wishes?

"These are, in fact, variations of age old problems in all of medical care," says Dr. Birnholz. "Ultrasound imaging has made an entirely new field (fetal medicine) a practical reality and I would hope specialists concentrating exclusively on fetal problems will work out new ways of dealing with these difficulties.

"Perhaps some of the foundations of this new field can be established here at Rush."

C.R.

Health Care in Russia As Seen By Rush Professionals

By Janice Perrone

St. Basil's in Red Square, Moscow.

Although the United States and the Soviet Union share many major health problems, including heart disease and cancer, our approaches to treating these problems can be very different, as two RPSLMC nurses and a physician discovered on recent trips to the U.S.S.R. Jean Kaufman, Ph.D., R.N., associate professor, College of Nursing; Bonnie Morrin-Taylor, R.N., oncology nurse; and Samuel Taylor IV, M.D., assistant professor, Rush Medical College, recently toured the U.S.S.R. exploring the health care system. Dr. Kaufman traveled with a group of nurse practitioners, and the Taylors were members of an oncology study tour.

Dr. Kaufman visited five Soviet cities: Moscow; Kiev; Baku, which is on the Caspian Sea; and Tbilisi and Yerevan, which are near the Iran-Turkey borders. The Taylors visited Moscow, Leningrad, and four cities in the Uzbek Republic near Afghanistan in Central Asia: Tashkent, Samarkand, Bukhara, and Shakhrisabz.

Throughout their trips, Dr. Kaufman and the Taylors discussed health care with personnel at neighborhood clinics called "polyclinics," where Russians go for routine health care, as well as at referral hospitals, which are acute care centers that can accommodate 1,200 patients. "Russian physicians and nurses appeared to be very open in discussions of treatments," Morrin-Taylor said. "Let cancer be our common enemy," they often told us.

There were some disappointments and frustrations for both Dr. Kaufman and the Taylors, however, as they were not always able to see areas they had hoped to. The Taylors were able to visit patient care areas in health care institutions in the Uzbek Republic, but not in larger cities such as Moscow or Leningrad. Dr. Kaufman visited outpatient areas and common areas such as dining rooms in health centers, but not inpatient areas. Information on patient care, Dr. Kaufman reported, came mainly from discussions with the head physician at each institution. These physicians, both Dr. Kaufman and the Taylors noted, were all men, although 70 percent of the physicians in the U.S.S.R. are women.

Dr. Kaufman and her group were particularly interested in learning about "feldshers," nurses who are analogous to our nurse practitioners. Personnel in the Soviet health care system includes physicians, feldshers, and nurses, who are somewhat equivalent to licensed practical nurses. Russian nurses are trained in hospitals for two years after graduation from high school, and most stay on to work in the hospital where they were trained. Feldshers have two years of training in the university system in addition to two years of hospital training.

"Feldshers generally work only in rural areas," Dr. Kaufman explained, "and have more responsibilities than do our nurse practitioners. For example, they do suturing and bone setting. In some rural areas, feldshers may be the first and only line of health care. While physicians act as a back-up, they may be many miles away.

"Unfortunately," Dr. Kaufman continued, "we weren't able to speak to any feldshers or see them at work. This was something we especially wanted to do since we had hoped to do a comparative analysis of the nurse practitioner movement in Russia."

The Taylors, who were interested in learning more about cancer treatment in the Soviet Union, Travelers, (right) Bonnie-Morrin Taylor, R.N., and Samuel Taylor IV, M.D., and (far right) Jean Kaufman, Ph.D., R.N.

found that treatments differed from those in America and, in some ways, were not as advanced. Although in Moscow physicians said they use a betatron for radiation therapy and do ultrasound tests frequently, the drugs and other treatments in use indicated to the Taylors that care of cancer patients in Moscow is about five to ten years behind ours and, in the Uzbek Republic, perhaps ten to twenty years behind.

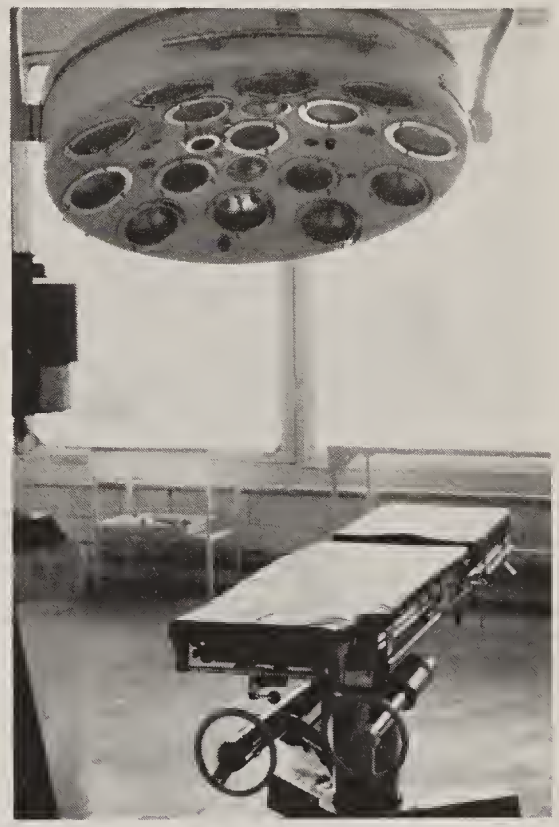
"For example," said Morrin-Taylor, "we've been using the drug cisplatin in this country for almost ten years. In Moscow they told us they used cisplatin, but in Samarkand and Tashkent, they told us they couldn't get it.

"We also asked physicians in Moscow if they were participating in any clinical trials," Morrin-Taylor continued. "They told us they had just completed a three-arm study in stage II breast cancer: modified radical mastectomy versus modified radical mastectomy with radiation therapy versus modified radical mastectomy with chemotherapy. The drugs they used for the chemotherapy were cytoxan, thiotepa, and 5FU. Normally, though, they don't use combination chemotherapy, which is administering more than one drug. Over the last 10 years, we've found that combination chemotherapy works better than single drug therapy in many types of breast cancer."

"Their ability to communicate with the scientific community in the rest of the world is very limited," Dr. Taylor pointed out, "so they don't know about our studies and our findings."

Technology in many parts of the U.S.S.R., especially outside the large cities, also did not seem equivalent to that in U.S. hospitals.

An operating room in referral center in Tashkent, Central Asia.



"Equipment was not always up-to-date," said Dr. Kaufman. "For example, all their intravenous tubing was rubber. We saw no plastic tubing in either the polyclinics or the referral hospitals. We switched from reusable rubber tubing to polyethylene tubing in this country in the late '50s. Their stethoscopes are also the old fashioned kind—rubber tubing with a funnel on the end for the bell, which we haven't used here for over 30 years."

The Taylors reported that some of the facilities they toured in the Uzbek Republic were fairly primitive. "In Samarkand," said Morrin-Taylor, "one 10x12 patient's room in a polyclinic had between six and eight beds. The beds were simple frame cots with mattresses that were about two inches thick, and there were no curtains between the beds. An operating room in a referral center in Tashkent had windows open and no screens."

By chance, Dr. Kaufman's group had the opportunity to examine the equipment inside a Russian ambulance.

"A member of our group, Larry, has angina," said Kaufman, "and was having chest pain in Tbilisi. Our tour guide sent for an ambulance, and we were surprised to find that it was equipped only with a stretcher, a portable EKG machine, a stethoscope, and a blood pressure monitor.

"Larry spent four days confined to bed in the hotel," Dr. Kaufman continued, "and he told us later that a physician and a feldsher saw him every day. He said the care was comparable to the outpatient care he would receive here, except that he was not allowed to be involved in the decision-making about his care."

Morrin-Taylor offered an explanation as to why patients are not involved in their care. "In Moscow, I asked if nurses discuss diagnosis and treatment with patients," she said. "I was told it was out of the question, and that it was never done.

"In Tashkent, I asked that same question of a woman physician. She explained that in addition to being doctors, they had to be actors and actresses. They believe that a patient's 'nervous system' cannot handle being told their diagnosis because it is too depressing for them. So while patients might be told they're having an ultrasound or surgery in the morning, they're not told why or what's going to be done. Not telling them is their way of protecting patients."

Preventive medicine is one of the main priorities of the Soviet Union's health care system, Kaufman and

the Taylors found. Annual checkups are encouraged, and there are many health spas where people can earn the right to go through their employment. Workers can get up to one month per year at a health spa at full salary.

"At these spas," Dr. Kaufman said, "the people drink and bathe in mineral water, which they think helps maintain a healthy population. There was one spa in Moscow about the size of four Olympic pools. It looked like a small lake. We saw people swimming in these hot springs with their bathing suits on. The ground was covered with snow and there was steam rising from the water."

The Taylors recalled a physician in Tashkent who gave preventive medicine a high priority. "He recognized that the automobile fumes in the city were unhealthy," said Dr. Taylor, "so he got the city's traffic rerouted so the residents would not be exposed to it as much. He was very proud of this accomplishment."

Support for new mothers is emphasized in the U.S.S.R. Because women are being encouraged to have children, they may take a two-year leave of absence from work at full salary while they stay home with their babies.

Patient uses a vaporizer for sore throat.

In addition to heart disease and cancer, two of the primary health concerns in Russia are alcoholism and tuberculosis.

"They didn't give us an explanation for the high tuberculosis rate," said Dr. Kaufman, "but we saw several obvious reasons. One is that they have mineral water machines similar to our coffee vending machines, but instead of a new cup dropping out for each customer, everyone uses the same plastic cup.

"As for alcoholism, the Russians realize the seriousness of the problem," Dr. Kaufman said. "To deal with it, they are having medical personnel in the polyclincis use community pressure to get the alcoholics to seek help. In general, medical personnel at polyclinics have a close working relationship with their communities, particularly with employers. For example, if someone is ill, he is referred to the polyclinic and must have the clinic's support to go back to work."

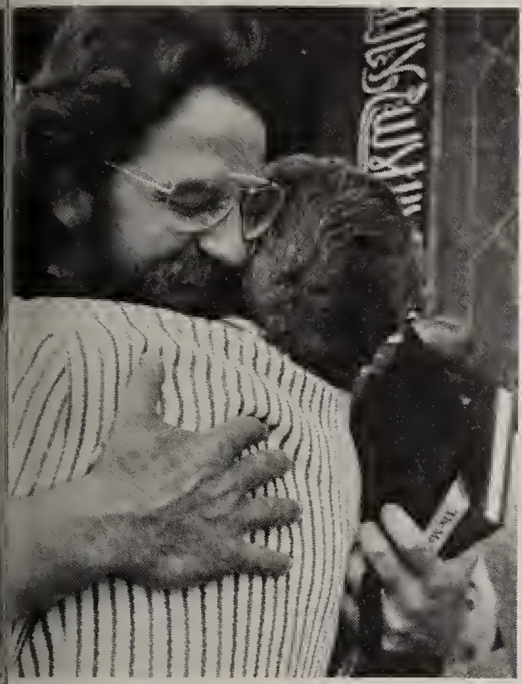
Increasingly, lung cancer is also becoming a major health concern in Russia. The head physician at the Moscow Institute indicated that, although the incidence of lung cancer is still lower in Russia than it is in the U.S., the rate has been rising in the last few years.

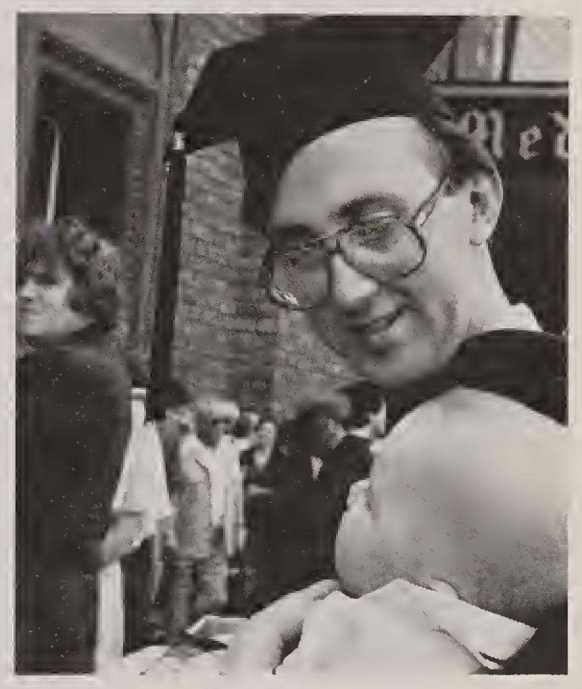
"I mentioned to this physician that he will continue to see more lung cancer," said Dr. Taylor, "because of the rise in smoking. Smoking has increased in Russia because cigarettes are now easily obtainable there. Even most of the physicians we met smoked, including this one. I'm afraid that a few years from now the incidence of lung cancer there will be unfortunately similar to our own."

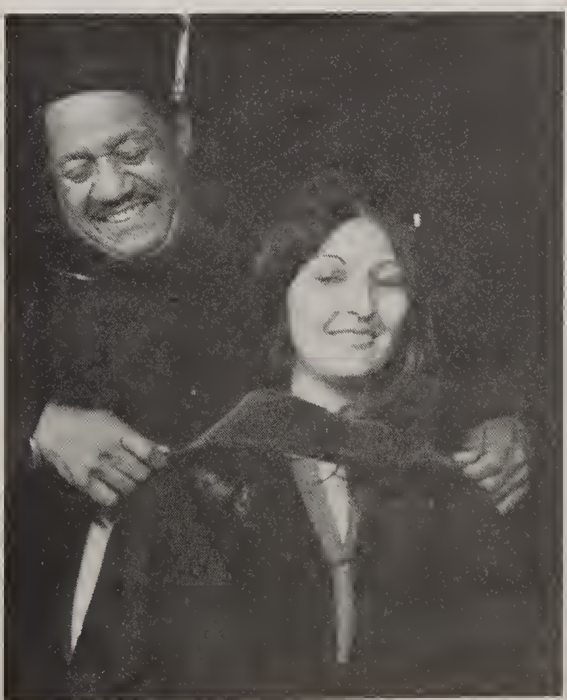
A fundamental difference between the Soviet and American systems is health care financing. Because health care is a right in the Soviet constitution, no one, including visitors, is charged for it. All medical services are paid by the Ministry of Health. And—as Dr. Taylor discovered—the Russians also have creative ways for financing health care projects. "We were told about a major new health care facility being built in Moscow with funds from an annual 'free work day'," said Dr. Taylor. "The people there give up one day's salary every year to support a major project like this. We thought it was a pretty good idea."

Staff physician and resident on rounds in patient care unit. Physicians in Soviet Union wear tall hats.

COMMENCEMENT 1982







Commencement 1982

Rush University awarded 370 degrees at its eighth full commencement exercises on June 5, 1982 in Chicago's Medinah Temple, including three master of science degrees in audiology, five in speech-language pathology, and four in occupational therapy, the first such degrees awarded in these College of Health Sciences programs.

Harold Byron Smith, Jr., Chairman of the Board of Trustees, and James A. Campbell, M.D., President of the Medical Center, conferred the degrees on the graduates. One hundred and twenty-four graduates received the doctor of medicine degree; two, the doctor of nursing science degree; two, the doctor of philosophy degree in immunology; three, the doctor of philosophy degree in pharmacology; 80, the master of science degree in nursing; nine, the master of science degree in clinical nutrition; twelve, the master of science degree in health systems management; 111, a baccalaureate degree in nursing; and 15, a baccalaureate degree in medical technology.

Walter J. McNerney, M.H.A., Immediate Past-President of the Blue Cross and Blue Shield Associations, received the honorary degree of doctor of humane letters. He was presented for the award by Donald R. Oder, M.B.A., Senior Vice President and Treasurer, who described McNerney as "one of the most influential of our nation's citizens in organizing and directing volunteer energies toward the goal of better health," and as "a business leader who has introduced imaginative solutions to some of our most pressing health care problems." McNerney outlined some of these problems and questions for the health care industry in the future in his commencement address, "Now, It's Your Turn." (see page 40.)

THE AWARDS

ALPHA OMEGA ALPHA HONOR MEDICAL SOCIETY

Undergraduate membership is extended to medical students who give promise of becoming leaders in the field of medicine.

Students elected to membership in Alpha Omega Alpha, Zeta Chapter of Illinois, were:

Keith Robert Berndtson
*Burton Boron
Rockne L. Brubaker
James Edward Bunn
*John Dudley Edwards
*Julieta Marimla Gabiola
Jeffrey Alan Goodman
Barbara J. Green
Charles Wayne Judy
Robert Bruce Love
*Robert John March
David Owen Miller
Thomas Michael Pellino
George Lazaar Schiffman
*Paul J. Schmidt
Robert Paul Schroeder
*Greg E. Sharon
*David Andrew Stewart
Joseph William Yedlicka, Jr.

**students installed as members in 1981*

SIGMA THETA TAU NATIONAL HONOR SOCIETY FOR NURSING— GAMMA PHI CHAPTER

Membership is extended to undergraduate and graduate nursing students who demonstrate outstanding academic achievement, leadership qualities, and commitment to the ideals and purpose of the profession.

Members in the Gamma Phi Chapter are:

UNDERGRADUATE NURSING

Jill Adams-Monley
Judith Ann Berndt
Ellen Margaret Bunten
Timothy Corbett
Karen Sawyer Ediger
Margaret Mary Evans
Kim Connelly Fischer
Tina P. Ginsberg
Kathy K. Gunnell
Karen Kelly Knapp
Bonita Jane Matuska-Petrovic
Michele Ann Mills
Jody Lynn Newman
Mary Schemper
Daniel James Sheridan
Joanne Skulavik
Diane Pauline Stamos
Carol Bartholomew Stoner
Marilyn Jo Vukobratic
Dolores Watts

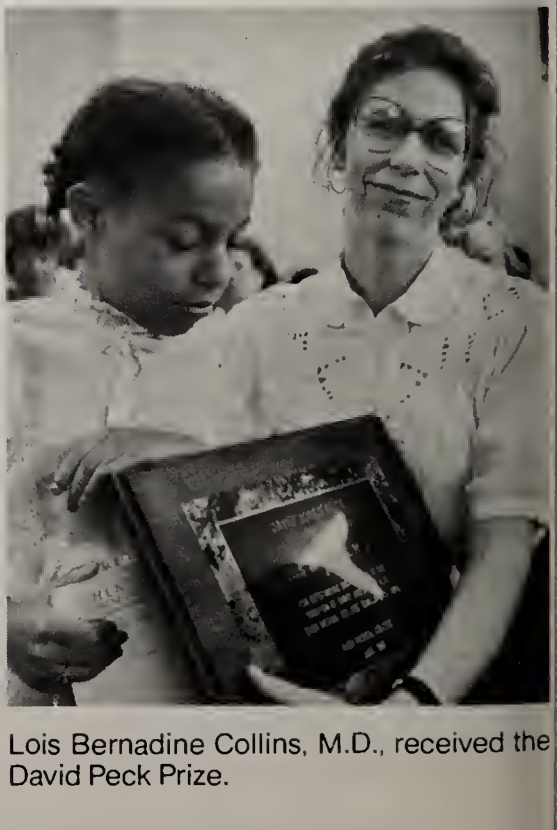
GRADUATE NURSING

Deborah Berkey
Ann Schelkun Bines
Mariana Bravo
Victoria Susan Johnson
Linda Marshak
Sharon F. McKanna
Deborah L. Panozzo-Nelson
Teresa Arlea Kuhn Pellino
Marie M. Perrelli
Susan G. Rosen
Glenda Lynn Sinkora
Deborah Smith
Doris Jabaay Van Byssum
Billie Lee Walker

HONORS AND AWARDS OF THE COMMENCEMENT INCLUDED:

THE NATHAN M. FREER PRIZE

To Jay Scott Weller voted by the faculty as outstanding senior medical student. This award was endowed in 1892.



Lois Bernadine Collins, M.D., received the David Peck Prize.

THE HENRY M. LYMAN MEMORIAL PRIZE

To Thomas A. Mayer, the outtanding junior medical student as voted by the faculty. This award was endowed in 1908.

THE DAVID PECK PRIZE

To Lois Bernadine Collins, for the student who has made the greatest contribution to the Student National Medical Association.

THE LEMMON COMPANY STUDENT AWARD

To Charles Wayne Judy, to the graduating medical student who has excelled in the study of family practice as demonstrated by excellence in scholarship and concern for patients.

THE SIR WILLIAM OSLER PATHOLOGY PRIZE

To John Dudley Edwards and Robert John March, medical students, for demonstrating outstanding achievement in diagnostic or experimental pathology.

THE UNDERGRADUATE CARDIOLOGY AWARD

To Paul J. Schmidt for the graduating student who has had the best performance in a cardiology elective course.

THE NEPHROLOGY AWARD FROM THE MUEHRCKE FAMILY FOUNDATION

To Julieta Marimla Gabiola for outstanding achievement in the field of nephrology.

THE UPJOHN ACHIEVEMENT AWARD

To John Theodore Barron, the senior medical student with the best research project.

THE AMERICAN MEDICAL WOMEN'S ASSOCIATION SCHOLARSHIP AND ACHIEVEMENT CITATION

To Lois Bernadine Collins, Julieta Marimla Gabiola and Barbara J. Green.

THE RUSH-PRESBYTERIAN-ST. LUKE'S NURSE ALUMNI ASSOCIATION AWARD

To Vera Zubenko, for the outstanding nurse graduate.

THE COLLEGE OF NURSING DEAN'S AWARD TO UNDERGRADUATE STUDENTS

To Ellen Margaret Bunten and Carol Bartholomew Stoner, for superior leadership in the undergraduate nursing program.

THE KELLOGG SCHOLARSHIP AWARD

To Paula P. Meier, for superior academic achievement by a doctoral nursing student.

THE COLLEGE OF HEALTH SCIENCES DEAN'S AWARD TO AN UNDERGRADUATE STUDENT

To Maria Josephine Mynatt, for outstanding academic performance by an undergraduate as chosen by the faculty.

THE MEDICAL TECHNOLOGY FACULTY AWARD

To LaTanya Lynn Broady, for outstanding academic performance by an undergraduate student as selected by the faculty.

THE COLLEGE OF HEALTH SCIENCES DEAN'S AWARD TO A GRADUATE STUDENT

To Paul Alan Goetzheimer, for outstanding performance by a graduate student as chosen by the faculty.

THE DEPARTMENT OF HEALTH SYSTEMS MANAGEMENT AWARD

To Michael Joseph Hoy, the outstanding graduate student as selected by the faculty.

THE OCCUPATIONAL THERAPY FACULTY AWARD

To Colleen Anne Forssberg, the student who demonstrated the greatest potential for contribution to the field of sensory integration as selected by the faculty.

SPEECH AND HEARING SCIENCES AWARD

To Janet S. Eaton, the outstanding graduate student as selected by the faculty.

THE AESCULAPIUS AWARD

To Russell M. Petrak, M.D., resident, Department of Internal Medicine, for outstanding resident-physician as voted by the students.

THE DANIEL BRAINARD AWARD

To Anatoly Bezkorovainy, Ph.D., Professor of Biochemistry, for outstanding teacher in the basic sciences as voted by the graduating medical students.

THE PHOENIX AWARD

To Harold L. Klawans, M.D., Professor of Neurology and Pharmacology, for outstanding physician-teacher as voted by the graduating medical students.

THE COLLEGE OF NURSING UNDERGRADUATE FACULTY AWARD

To Linnea Carlson-Sabelli, M.S., Assistant Professor of Nursing, for outstanding teacher as voted by the graduating students.

THE COLLEGE OF HEALTH SCIENCES FACULTY AWARD

To Raymond L. Kaplan, Ph.D., Assistant Professor, College of Health Sciences, for outstanding teacher as selected by students.

Robert John March, M.D., (right), shown at Awards ceremony with John L. Flore, M.D., a 1981 graduate of Rush Medical College, was one of two recipients of the Sir William Osler Pathology Prize.

Doctor, heal thyself—She does, and stands tall

By Michael Tackett

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Mari Rowe was feeling good about herself. After completing a medical clerkship in a small town in the hills of Kentucky, she decided to take a scenic drive in the mountains before returning home to Chicago.

It was a bright, crisp winter morning in March of 1981. She was driving along the Virginia Skyline highway in the Appalachians when a small animal darted across the road. Mari swerved to miss the animal but lost control of the car, sending it hurtling down the mountainside. When she looked up, she could see the top of the mountain, but she could not move.

The 25-year-old third-year medical student, who in college played the string bass with an artistic fluency and performed as a champion debater, could not move even her little finger.

"I rolled so far that when they removed me, they used the road at the bottom of the mountain," Mari recalled, seated beside a desk in Rush Presbyterian-St. Luke's Medical Center, wearing a white doctor's coat.

"I knew that I had broken my neck. But with my knowledge of medicine, I knew that because I wasn't bleeding, I wasn't in immediate danger of dying. The forest ranger who first saw me told me later that he had seen three or four cars go over that hill and I was the only person who lived."

She was taken to the University of Virginia hospital, where doctors told her she would not be able to walk again, let alone continue medical school and become a physician.

And after nine months of tedious, arduous therapy, she returned to school. On Saturday afternoon, Mari Rowe stood among her classmates as she participated in graduation ceremonies at Rush Medical College. She still walks with a noticeable limp and has only limited use of her left arm.

Graduation did not seem even remotely possible nine months ago when she lay motionless in a hospital bed.

"They decided it would be best not to move me. They had to drill holes in each side of my head and insert pins that would help keep my neck from moving. I had to lie flat on my back for eight weeks. Most of that time, I couldn't move anything."

She progressed slowly, working with light weights and performing laborious exercises. She improved to the point that she could travel and she was transferred to the Rehabilitation Institute of Chicago. She was released last September.

Her father, Charles, a patent lawyer who lives in Lake Forest, went to Virginia to be with her during the early treatment.

"When I got back from Virginia, I contacted the dean of student affairs to discuss Mari's situation," he said. "He made it clear that they were going to make Mari a doctor no matter what. It's almost a miracle the way she's come back. She's going to be a damn good doctor."

"A lot of it, I think, is what people expect of you. If they tell you you can do it, it is more likely that you can. I think most people have it in them to recover, to keep going. You just adapt."

Adaptation was one thing. Recovery was another. Not many doctors function without the full use of their hands.

"I couldn't use my hands for two months. I had to learn to eat. Lying flat on my back, it took me more than a month to learn how to open a carton of milk by using my teeth and special instruments."

Only a week before the accident, she delivered her first baby in a clinic in Hindman, Ky.

"It was very frustrating. The hardest thing was that doctors are used to being in control, to giving orders. Medical school teaches you to be totally independent, and all of a sudden you are totally dependent. They had to come in every hour to turn my body.

"The first time I was able to walk, my boyfriend at the time and my roommate were there. They both started crying. They thought I would never be able to walk. I just kept thinking that I would get better."

After initial therapy, she faced her greatest hurdle, that of going back to school.

"I was very hesitant about going back to school. I didn't know what my limitations would be or how doctors would react to me. The first week I was in obstetrics and I began to realize that other students were getting to do things I wasn't getting to do.

"I asked why and they said that I would never be able to do some of these things and that I should get used to it. It was terribly upsetting and I was not sure enough of myself to tell them they were wrong."

But she talked to her classmates and they urged her to fight back. "People still tell me I can't do things. I tell them I can."

Dr. Gerald Gotterer, Associate Dean for Medical Student Affairs at Rush Medical School called Mari's recovery remarkable.

"At first, we thought she was going to be quadraplegic, but now her disability is not marked," he said. "Our feeling was when it first happened that we would work with her and see that she completed her requirements, then assess her capabilities for practice. She is performing now like most medical school students."

Gotterer said that the limited use of her left hand and paralysis on her left side doesn't inhibit her performance significantly.

"Doctors tell me that I won't have the patient's respect and that is so important," Mari said. "But I've never heard that from a patient. Having a handicap and overcoming it, I think, makes them feel that you are human and you have something to share with the patient."

Her struggle also has not been without emotional loss. She parted with the man she had dated for more than seven years, the man she planned to marry.

"He came to visit and stayed through most of the recovery. But I don't think he ever got used to the idea of me being different. If I had been totally paralyzed and he knew I needed him around, he would have stayed. But once he saw me on my own, he saw me as different. But if he would not accept me as I had been, then it's better that we broke up.

"People react differently to different stresses. I just react by getting tougher.

"I feel like I really earned this graduation."

Mari Rowe, M.D.
(Chicago Tribune photo by Jose More)

Now, It's Your Turn

Selections from the Commencement Address

By Walter J. McNerney
Immediate Past President
Blue Cross/Blue Shield
Associations

Walter J. McNerney, M.H.A. is Immediate Past-President of the Blue Cross and Blue Shield Associations. A distinguished health administrator, McNerney began his career with the Hospital and Clinics of the Medical Center of the University of Pittsburgh. In 1955, he joined the faculty of the School of Business Administration at the University of Michigan, and in 1958 was named Professor and Director of the Bureau of Hospital Administration at that university. In 1961, he was named President of the Blue Cross Association and, in 1978, President of the Blue Cross and Blue Shield Associations. At present, he is Professor of Health Policy in the J. L. Kellogg Graduate School of Management, Northwestern University.

McNerney is the author of three books—Hospital and Medical Economics, Regionalization and Rural Health Care, and Working for a Healthier America—as well as many articles and monographs. He earned a bachelor of science degree from Yale University in 1947 and a master of hospital administration degree from the University of Minnesota in 1950.

Mr. McNerney's professional contributions over the years have merited numerous honors and awards, including the 1982 Award of Honor of the American Hospital Association. At the 1982 Commencement of Rush University he was presented with the honorary degree of Doctor of Humane Letters.

You are entering the health field at a time of greater change and more lively action than any I have experienced in the past.

The speed of change and the variety of choices involved will add considerable zest to your vocations, but also will make special demands on your professional life.

In essence, you will have an opportunity to earn a good and rewarding living, but you will face the value questions that will become ever more complex and demanding. Tensions between community or patient service and self fulfillment are not new, nor are they unique to the health professions.

Whether you are of the Medical College, the College of Nursing, the College of Health Sciences or The Graduate College, your roles will be more complex and their connections with other roles subject to more potential ambiguity than those faced by your faculty before you, and during the 1980s, the complexity will grow. The major driving forces will be expanding technology, growing consumer sophistication and expectations and a gradually broadening definition of health, adding new psychological, social and economic components to the delivery of service. The areas of gene splitting, monoclonal antibodies and peptons leading to highly specific interventions and a vast reduction in unwanted side effects, will alone open up a vast new frontier of services. Better education and improving lifestyles will enhance consumer awareness and expectations. And, an aging population literally will require new and broader ways of defining health.

Inevitably, these and other factors lead to greater specialization which, in turn, leads to concern about overlapping spheres of territorial influ-

ence. Thus, *relationships,* as well as individual roles, become more demanding.

In the 1980s, the number and variety of health professionals will grow to correspond to community size. Territorial issues also will emerge, unless our ability to work together supportively improves. To the extent that such issues may add to costs and detract from effective service, each of us faces value judgments regarding role and team play.

A Climate of Change

The institutional life of which most of you will be part is also undergoing rapid change. In Washington, D.C., cost containment is now the major driving force for legislation. Fifteen years ago, we talked more about expanding access to care. Now, the country faces excessive deficits, and health services are seen as a major element of the problem. Heavy losses are projected for Medicare and Medicaid, unless substantial program changes occur.

The federal government wants to end its open-ended commitment to the elderly and poor, to put limits on its contributions. A three-pronged attack has been launched by the Administration to do this, i.e., greater use of competition, less use of regulation, and decentralization of responsibility to the states and the private sector. Legislation has been offered to include greater consumer choice among benefit plans at the place of work, greater cost-sharing by consumers, and encouragement to new and innovative delivery systems...claims are made that these and other similar moves, relying to a greater extent on market forces, will do a better job with less costs than top-down regulation. Greater productivity will close the gap.

Whether it will, remains to be seen, but for the moment, costs and responsibilities are being shifted to the states and the private sector.

States share similar concerns about costs and about accepting unlimited commitments. Many lack the resources and the administrative expertise to pick up the slack left by the federal government. As a result, the states are, on the one hand, contesting certain responsibilities and, on the other, shifting costs to the private sector through, for example, tighter eligibility standards and limits on payments to hospitals under Medicaid.

Concerns about costs are not confined to the government. Employers are also concerned. Fringe benefits are now approaching 40 percent of payroll costs in some industries and health benefits are a growing part. As a result, employers are shopping for carriers that can reduce or at least moderate cost increases by impacting the delivery system through either incentives or controls. A few have resorted to self-insurance, particularly where the work force is young and healthy, and some have started to strike special deals with hospitals and physicians involving lower rates for, virtually, a guaranteed volume of business. In over 100 communities, employers are involved in voluntary health coalitions. They are collecting facts that throw into bolder relief the performance of individual hospitals or staffs. And they are starting to ask pointed questions about, for example, the number of full-time employees per bed for hospitals of comparable size, and scope of services, or lengths of stay among institutions for high-frequency diagnoses after applying controls on age and sex. The Business Roundtable and allied organizations have placed health care costs high on their action agendas. Five years ago, industry CEO's had little interest in health services *per se,* at least as a cost of doing business.

The impact of government and employer actions has fallen directly on providers and health professionals. In response, as financing gets tighter, there has been a veritable explosion in new forms of delivery modes, the dimensions of which are only now coming into focus. There are many more shared services among hospitals but, more boldly, we are experiencing a significant amount of vertical and horizontal integration of hospitals and allied services. Over 30 percent of hospital beds in the United States are now in multi-hospital systems. Some speculate that by 1990, most of the beds will be in a few hundred systems, versus the 7,000 plus hospitals we now have.

There also has been a growth in investor-owned institutions in recent years, generally focused on specific market niches and making full use of networking and other innovative techniques. These institutions generally are not found in low income neighborhoods or where tertiary care and allied teaching and research programs are involved.

Hospital systems, however owned, are putting the future of the free-standing acute, general hospital in some doubt. The major forces ahead favor prevention, primary care, acute care, extended care and home care under one institutional matrix, and economy of scale favors networking where geographical and other circumstances permit. Toward the end of the 1980s there

likely will be growing pressure to include occupational health services, school health services, maintenance and dying services in the same matrices.

Paradoxically, in the face of greater institutional cohesion, we also will see debundling of services competitive with the hospital in the 1980s, inspired in part by an increasing number of health professionals. The process has already started, for example, free-standing ambulatory surgical centers, regional laboratories, hospices. Thus, the health field is going in two directions at once—becoming more institutional and more entrepreneurial—each placing differing demands on the health professional team player vs. entrepreneur.

Special interests are also seen at the health association levels. Twenty years ago the American Hospital Association and the American Medical Association pretty well represented hospitals and doctors. Today we have myriad special groups; power is more broadly dispersed; leadership has more restrictive mandates.

A lot has happened in a short period of time. It is a yeasty time, challenging, but also a bit unsettling and intimidating. Not all institutions are coping. Not all will adapt or survive.

In early 1981, greater competition and less regulation (as proposed by the Administration) seemed an effective way to deal with rising costs. Favored economists pointed out that providers and professionals were being rewarded, through cost reimbursement and UCR payments, equally for efficient and inefficient services while they shared too little in the risk, that consumers were too often insulated from transactions through comprehensive prepayment, and that entry into the market of new delivery systems was too restricted (by professions and by management/labor contracts).

Not all economists, even though they shared the same concerns, felt that market forces were the answer. With increasing vigor they have pressed the limitations of market in arbitrating life/death and human service issues, pointing out that price is an unreliable allocation mechanism involving complex human services; the difficulty a sick individual has in influencing the behavior of hospitals and health professionals through a "transaction" and the fact that large deductibles and copayments affect low income groups disproportionately...

In the early 1970s the health field—at least the private sector—was geared to fight comprehensive national health insurance featuring top-down regulation. Now we see the federal government and states limiting their responsibilities; presumably, the millenium has arrived! But, the private sector is poised between feelings that it should take over and that it can't—convinced that old ways won't work, but not sure what will.

More debate is needed, and we will get it as we seek the right balance of competition and regulation. And balance is assuredly the key. But, in the meantime, the cost shifting begun by government is being resisted by employers who do not want to subsidize the government and by many hospitals and health professionals. Thus, it falls to the patient and, of course, those hit hardest are the low income groups and the aged (who take up more care). In a year this problem will become serious enough to influence the federal government in its current preoccupation with costs and will influence 1983 legislation.

Winners and Losers

These changes have caused a number of health institutions to reexamine their status. Clearly, the fluidity and intensity of the environment will penalize the weak institutions.

This realization has led an increasing number of institutions and persons to ask the basic questions: What business are we in? Where do we want to be five years from now? How do we get there? Is, for example, Blue Cross another insurance company trading in dollars or an institution interested in health reforms?

In turn, these questions have started to put a heavy emphasis on corporate planning—clarifying mission and goals, developing five-year objectives and strategies, analyzing the environment to understand consumer wants and needs—and greater emphasis on sophisticated management and support systems, whether the enterprise is large or small. Ten years ago, many hospitals did not have even reasonably complete budgets.

But, corporate planning and better management don't necessarily deal with value issues (though they should) and as we contemplate the 1980's, there are several of these to be addressed since they are critically important.

Addressing Value Issues

Let me address a few, exemplary only of what lies ahead.

How should a hospital be viewed in an environment where the government is curtailing its commitments to the poor and cost containment is an operating imperative?...Should it be viewed in the nature of a business: avoiding

igh financial risk ventures or
opulations, supporting competi-
ion based solely on price with little
r no community planning, sharing
nformation only reluctantly and
voiding cooperation under the
uise that it could lead to anti-trust
oncerns? Or should it be viewed
the nature of a public service
nstitution: to help bring improve-
nent and change to the delivery
ystem as a whole, to improve use
ates and impact favorably on costs,
villing to serve a cross section of
e community with a variety of
ealth services and committed to
ommunity need as well as to insti-
utional goals? In fact, there are no
ure models of either. But, it is dis-
urbing to see some hospitals and
rofessionals actively avoiding, and
ome others only tipping their hats,
the needs of low income patients.

Should a carrier, for example,
lue Cross/Blue Shield or Pruden-
al, attempt to shape the delivery
ystem through incentives and how
ey spend their money or leave
is job to the government or the
elivery system itself? Is the carri-
rs' only job that of sharing risk?
Vhat are the carriers' obligations to
w-income groups?

As hospital systems explore di-
ersification in search of operating
come, how far can they go in joint
entures with business firms before
e thrill of the bottom line over-
omes concern with the quality of
atient care?

Do health professionals concern
emselves with cost/benefit or
enefit at all costs? Recently, the
ing County Medical Society
unched a program to enable pa-
ents with little or no money to re-
eive care. Some 1,000 physicians
greed to participate. Is this a pro-
ram to be emulated or only a
emporary patch on the Medicaid program?

Are lifestyle, environmental and cultural factors, often casually connected with health status, within or without the purview of health professionals? If the answer is yes, is the interest deep enough to identify fads, actively raise public interest in staying well and productive and in greater self care, versus professional dependence? Is it broad enough to be tailored to the special needs of the aged?

Is education and research in the health field based solidly on care of the patient, or is that care a servant to education and research?

Do we believe in a minimum standard of care for all, despite race, creed or income class, and design our programs accordingly, or in several distinct classes of care?

Because the current environment is open to new concepts and not yet captured by any orthodoxy, either of the right or left, because decision-making is getting closer to home, these and other questions should take on special meaning.

Some Personal Observations

To survive and flourish, the health field must change with the overall environment of which it is an integral part (that is why health systems differ around the world and people believe that their system is best). Our system is pluralistic and innovative, exciting to work in, but so far as it has come, it needs reforms, and strong pressures for change are on it. Your job, in part, as I see it, is to help shape change, not blindly fight it as some professionals do, and to anticipate that the field will differ significantly in 1990 from what you see today. As one wag put it: "The future isn't what it used to be."

In helping to effect strategic changes, I hope that your posture as a professional will be one of negotiation, not imperious edict. The large value issues you will face, whether in the context of an individual or a community, are not absolutes, nor are they often solvable by standardized remedies; they generally involve give-and-take among patients, the community and professional interests, and genuinely held views.

With negotiation, one should have a point of view. I hope you have one or will develop one based on your professional experience to date and on a concerted effort to understand more than your corner of the environment. Use this knowledge to develop your own personal bridges between community and patient needs, develop your own sense of justice and of what sound care is. Know that sound health services are not the results of the latest pronouncement of the Department of Health and Human Services.

Learn to understand how institutions and associations act. The odds are that you will work for or with one. To date, health professionals have been too remote from institutional management. They must now become an integral part, as qualitative and quantitative considerations become more inextricably related. And, institutions do not act altogether like one-to-one relations. In fact, over time, institutions develop needs and goals of their own, often only fragily related to better morbidity and mortality outcomes. For those of you who use quality as your prime frame of reference and expertise (or as your trump card), it is especially important to be honest about what quality is and what it isn't—or, we will all be buried in technology, education and professional self-fulfillment.

Keep foremost in mind that, despite all the public debate, in the last analysis, the real battle now being fought is not how to balance competition and regulation; it is how to balance competition, regulation and voluntary effort (or self-regulation). One distinguishing feature of the United States health system is that it has always involved a generous amount of voluntary effort in the form of volunteers, self-imposed professional standards, free care to the needy, and response to community needs. In the 1960s, this impulse was dulled by the *tour de force* of federal legislation including new and constructive regulations.

With the thrill of top-down solutions, economists, who are generally cynical about volunteer efforts, were joined by intellectuals who protested that important health matters could not be trusted to the private sector or to local communities, let alone to voluntary effort. Now we see a resurgence of private initiatives on several fronts...Voluntarism is, in fact, a critical force that lubricates the relations between competition and regulation and keeps either from going to extremes.

Taking Your Turn

My primary concern is whether your sense of mission embraces a broader set of issues and values than those you confront on an everyday basis; a broader set of moral commitments involving the community as well as the individual patient; a desire to play a useful role, no matter how modest, as a professional, or as a volunteer, in bringing about a more creative interplay among the environment, technology and humankind.

If your North Star is right, money and position will take care of themselves. Your commitment and your personal integrity are the real stakes in today's state of institutional redefinition...the determination of who takes care of the disadvantaged in a more competitive economy and whether specialization leads to chaos or is unified by a dedication to common purpose.

At this Medical Center, you have earned a distinct advantage. Through outstanding leadership, this Center has developed a comprehensive system of health services at all levels of care with supporting educational and research programs, rooted in the needs of a defined population. It has a strong sense of mission, an integrated management and a choice of both delivery and financing modes (partly through affiliations with unduplicated, surrounding institutions). And, it has enough unity to address cost containment and access issues effectively.

You have been involved in a model that is attracting an increasing amount of national attention where management and the professions are one, where service is geared to the public as well as the patient. The model is working on improvements and needs to, but you have at least a five-year start on most of your peers, too many of whom live in fragmented environments where the issues have not been joined. This affords you an advantage and a special obligation.

It is indeed a yeasty time—full of wonderful perplexities and stirring opportunities. *And, now it's your turn.* ◆

Rush Volunteers Pass One Million Hour Mark

The month of July marked the completion of over one million hours of service donated by Medical Center volunteers since September, 1959, when the volunteer program was established at the time of the merger of Presbyterian and St. Luke's Hospitals.

According to Jane Wheeler Warren, who was named director of volunteer services in 1961 and who until her retirement in 1982 headed the program, there have been quite a few changes down through the years.

"The volunteer department has changed as the needs of the hospital have changed," she says. "When I first came to the department, we had about 150 volunteers. Today, with Presbyterian-St. Luke's Hospital, the Bowman Center and Sheridan Road Hospital, we have over 400 volunteers."

Until a few years ago, Warren points out, most volunteers tended to be middle-aged women whose children were either grown or in school. Today, a relatively small percentage of volunteers falls into that category. So who is likely to volunteer at the Medical Center? High school or college students considering going into a health profession. Professional men and women who want to balance out what they do during the day. Retirees who want to share their expertise. Women who want to gain experience that will allow them to enter the work force.

Volunteer Virginia Winston DeYoung, a Medical Center Trustee, helps discharge her daughter-in-law and new born grandson. New Volunteer Services office is named in honor of Mrs. DeYoung.

Loy Thomas, director of volunteer services at Presbyterian-St. Luke's Hospital, recently completed an analysis and found that most PSLH volunteers fell into the 20-35 and 60-80 age categories.

"In the past five years," says Thomas, "the number of women entering the work force has adversely affected volunteering. But we've got more people coming in the evenings and we have an increasing number of students."

Through the years, the scope of services provided by volunteers has changed too. Volunteers now make follow-up calls to people who have called the Poison Control Center for help, assist in the library, give tours of the Medical Center to community groups, assist the Blood Center staff with blood drives, provide educational and recreational activities on the pediatrics unit, assist nurses in the perinatal unit with infant care, make rounds with craft and art carts, escort patients who are being admitted or discharged, assist in public educational programs, and work in the finance department and gift shop—to mention a few of their activities.

Some of the services that volunteers provided in the past have evolved into full-fledged departments. Volunteers were once totally responsible for the pediatric playroom, an area now handled by the child life therapy department. A program of puppet therapy for children about to undergo surgery was also begun by the volunteers, and later turned over to the child life therapy staff.

"Volunteer services also planted the seed for what became the patient family relations department," says Warren. "For years we had 'volunteer stewardesses' who did the kinds of things that patient representatives do, only on an unofficial basis.

"There have been many changes," she says, "but many of the traditional things are the same. The need to relate to patients and families exists and will always exist." J.L.H.

Elect New Members to Board of Trustees

Three new Trustees, Charles Stanley Locke, W. L. Weiss, and James R. Wolfe, have been elected to the Board of Rush-Presbyterian-St. Luke's Medical Center. Their election was announced by Harold Byron Smith, Jr., chairman of the Board of Trustees, at the group's annual meeting in November.

Mrs. George S. Chappell, Jr., was also elected a Life Trustee at the annual Meeting. Mrs. Chappell has been a Trustee since 1971. Elected as Annual Trustees for the first time were Mrs. Edward Hines and Waltman Walters, M. D.

Locke is chairman, chief executive officer, and director of Morton Thiokol, Inc. A native of Mississippi, he joined Morton Norwich in 1975, was named chairman and chief executive officer in 1981, and arranged for the merger with Thiokol.

Weiss is chairman and chief executive officer of Illinois Bell Telephone Co. A native of Pennsylvania, he took over the presidency of Illinois Bell in 1981 and in November 1982 was elected chairman.

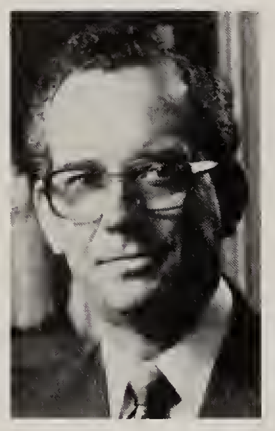
Wolfe is president, chief executive officer, and a director of the Chicago and North Western Transportation Company. Prior to assuming his current position, he was vice president of operations with responsibility for supervising the Chicago and North Western's transportation, engineering, and mechanical functions.

Mrs. Chappell has been a member of the Woman's Board since

1938. She has served two terms as president of the Board and has served as chairman of the Fashion Show.

Mrs. Hines, current president of the Woman's Board, has been a member of the Board since 1966. She has also served as coordinator/assistant to the Woman's Board president, vice president for membership relations, and chairman of the Fashion Show.

Dr. Walters, a 1920 graduate of Rush Medical College, is emeritus professor of surgery at the Mayo Clinic and Mayo Graduate School of Medicine. He is the author of more than 600 articles on surgical and medical topics.



Charles Stanley Locke

W.L. Weiss

Waltman Walters, M.D.

James R. Wolfe

Mrs. George S. Chappell, Jr., (left) and Mrs. Edward Hines.

New Rush Bone Bank Aids Cancer Patients

At 15, Michael was the quarterback of his sophomore high school team until soreness in his right arm prevented him from playing the season's final game. Six months later, when the same soreness kept him from pitching for the school baseball team, Michael came to Rush-Presbyterian-St. Luke's for examination. An x-ray revealed a tumor in the upper arm bone.

Traditionally such a tumor is difficult to treat and still leave a functioning limb. But thanks to a relatively new surgical procedure using human cadaver bones, Steven Gitelis, M.D., an orthopedic oncologist, and Assistant Professor, Department of Orthopedic Surgery, and a Rush medical team were able to remove the diseased bone and still leave Michael's arm and shoulder intact and functional.

Operations for benign and malignant bone tumors such as Michael's involving cadaver bones are still uncommon. Only about 50 are performed yearly in the United States, according to Dr. Gitelis, who has performed two such operations in the last six months. In his procedures, Dr. Gitelis uses frozen bones, not freshly harvested ones.

For more than 10 years, physicians and researchers have been aware that bones frozen for use in bone transplant operations are less likely to be rejected than bones freshly harvested from a cadaver. To date, only Dr. Gitelis and a handful of other surgeons have applied this knowledge to the treatment of bone cancer. As a result, Rush-Presbyterian-St. Luke's Medical Center now has the only bone bank in the Chicago area storing large human cadaver bones. The bones, of all sizes and shapes, are stored in a 17-cubic foot-capacity, ultra-low temperature freezer.

The cadaver bone transplant (allograft) is still considered an experimental method of replacement. Deficient bone is more usually replaced with a patient's own bon (autograft) or with a piece of meta

Dr. Gitelis points out that eac method of replacement has disadvantages. The autograft demand that the surgeon first operate to remove bone from one location fo use in another part of the patient body. Very often there is simply no enough bone available for transplant material. In addition, joint cannot be "borrowed" for use i other locations.

Although currently considere the state of the art, metal, too, ha serious disadvantages. "Tendon and ligaments can't be attached t metal but can to transplante bones," Dr. Gitelis points out. "I addition, when you replace bon with metal, you often have to cement it in. When the metal loosen you've got to re-cement it. Eventually replacement becomes impossible. I generally treat adolescent and young adults—like Michael— who have a lifetime ahead of them Metal isn't for them."

In cadaver bone replacement, th advantage of a fresh (as opposed t frozen) transplant lies in the fac that some of the bone and cartilag is still live tissue. The disadvantag is the high incidence of rejection.

While frozen bone has the advantage of an almost non-existent incidence of rejection, the bone an most of the cartilage is dead. If th transplant is successful, however the body actually resorbs the dea bone over a period of 18 months t two years and replaces it with th patient's own bone. Bone cells creep up over the dead bone, which acts as a kind of template upon which the new, living bone is laid. If the body fails to resorb the transplanted bone, it soon crumbles.

Cadaver bone transplants are very successful in non-weight-bearing bones, such as shoulder, forearm, wrist, and elbow bones, according to Dr. Gitelis. They have also proved most successful when the portion of the bone being replaced is a "center slice." In such a case a "creeping substitution" of living cells from two directions occurs.

Thus far, the procedure has been unsuccessful in weight-bearing bones, such as those in the thigh, shin, and hip. "In these areas the transplanted bone generally crumbles before it has a chance to be resorbed by living cells," Dr. Gitelis explains. "We must then rely upon metallic or autograft replacement."

Dr. Gitelis suggests that the cadaver bone transplant may have its greatest impact in the future treatment of arthritis victims. "Today millions of arthritic Americans have metallic joint replacements. In 10 years the cadaver transplant may prove to be the state of the art."

W.L.

Program Aids Students in Career Choice

For the past four summers, bright, science-oriented college students have been working at the Medical Center to prepare for careers in the health field. They are participants in the Chicago Area Health and Medical Careers Program for minority and low-income students. This year, thirty-two students spent two months at Rush, working in research laboratories and administrative offices.

"The students are assigned to one of the Chicago-area medical schools after attending weekend classes at the Illinois Institute of Technology," says Irene Turner, Administrator, Rush Cancer Center, and coordinator of the student program at the Medical Center. "They start in junior year of high school and spend their first summer 'on the job' after graduation. They usually stay in the program for four summers."

Clinical and basic science departments at Rush are involved with the program. Faculty and staff serve as preceptors, guiding the students in a variety of projects. The students assist in research, chart statistical data, work on computer terminals, run laboratory tests or distribute health education information.

Nineteen-year-old Keith Lim, sophomore biology major at the Illinois Institute of Technology, spent two summers working with preceptor James Woodman, Ph.D., in the Department of Orthopedics. Lim helped Woodman test metal alloys that coat artificial knee and hip joints.

"You wouldn't take this job if you were only in it for the money," says Lim. "I'm here because I want to be. I plan to go into medicine and the experience I get at Rush is invaluable."

Other students in the program also cite the experience of working in a hospital setting as one of the best things about their summer jobs.

The program has already influenced one student in a career choice. She enrolled in Rush University's College of Nursing after spending two summers working in nursing administration at the Medical Center.

F.M.

OB Nurses' Concern Prompts New Program

The Rush model for nursing is nationally recognized for decentralizing decision-making and emphasizing primary care. Under such a system, it is only natural that nurses most directly involved in patient care are in a position to identify needs for clinical research. Such was the case when staff nurses in obstetrics at Presbyterian-St.Luke's Hospital discovered that some new mothers might be leaving the obstetrics service with an inadequate knowledge of postpartum care. When the nurses expressed their concern to Nancy MacMullen, M.S.N., R.N., practitioner-teacher on the hospital's family-centered care unit, she worked with staff nurses and administrators in obstetrics to develop a program to investigate the situation.

As a result, Mary Brucker, R.N., a doctoral nursing student in Rush University and a certified nurse midwife, was hired to make home visits to selected healthy mothers and babies discharged from the obstetrics service after 48 hours. The home visit program is funded, in part, by the March of Dimes Birth Defects Foundation.

"In the past, new mothers left the hospital three to five days after delivery," says Brucker. "But a national trend toward early discharge now means that most hospitals discharge healthy mothers and their babies after 48 hours. The nurses were concerned that this didn't leave them enough time to educate new mothers and ensure a good start towards positive mother-child relationships.

"Nurses at Rush are involved in family teaching as well as patient care," explains Brucker. "After a normal delivery some patient care, of course, is required. But our nurses' emphasis also is educational to help the family unit come out of the hospital healthy, happy, and trained to care for the new family member."

In her home visits, Brucker answers questions that the nurses may not have had time to answer in the hospital—questions on nutrition, diet, clothing, infant stimulation, and routine infant care. Her one-time visits occur within three to five days after a mother and child leave the hospital. If Brucker feels that more visits are required to a particular home, she contacts members of the Medical Center's extended care department, the Rush Home Health Program, or the Mile Square Health Center, Inc., a member of the Rush health care network, which has a federally funded program that follows up on patients on a long-term basis.

In addition to collecting valuable material about the kinds of information new mothers want and require, Brucker is evaluating the usefulness of the home visit in postpartum education. According to Brucker, home training offers certain advantages over hospital training.

"Mothers are more relaxed and open in their own homes. And they have a better sense, after just a few days at home, of what information they want." In addition, she says, home visits often give her an opportunity to reach additional members of a family involved in the infant's care such as the father and grandmothers.

Brucker and MacMullen both emphasize that the home visit program reaches diverse populations. In a single day Brucker may visit the home of a 16-year-old mother still in high school and that of a 36-year-old career woman who has just had her first child. "Both these mothers may have different concerns about their babies, but each is anxious to learn as much as possible about the child's care."

Brucker and MacMullen also believe that the staff-initiated home visit program can be directly attributed to the Rush model for nursing. "When nurses involved in direct patient care point out a need for research, people here listen. The clinical judgment and skills of the direct patient care provider are not simply viewed as significant, they are expected," says MacMullen.

"It was the concern of Rush staff nurses that brought this clinical problem to the attention of the unit leader and administration," says Brucker. "We feel it's essential to help new mothers make the difficult transition to parenthood. And I can't help but believe that if we help families in the very beginning that it will make a very significant impact on their relationships and on their future health." W.L.

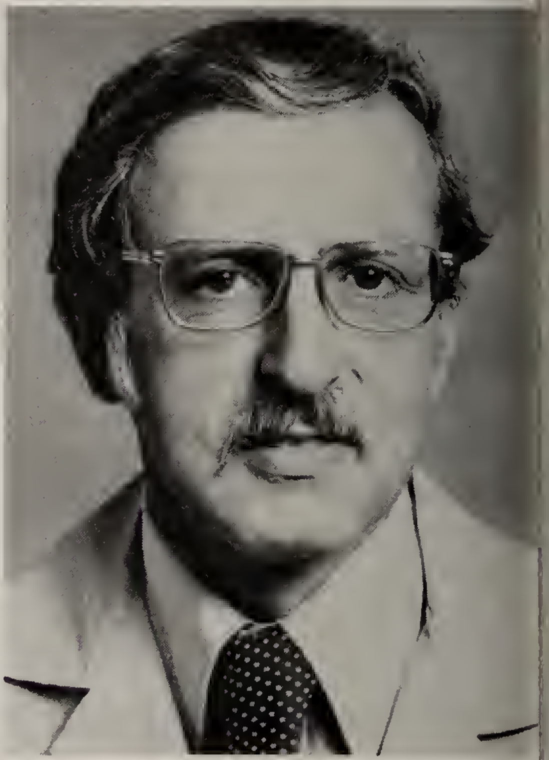
Mary Brucker, R.N., visits with new mother in obstetrical unit.

Fried Joins Staff of Medical Center

Walter Fried, M.D., has been appointed Associate Dean, Medical Sciences and Services, Rush Medical College, and Assistant Vice President for Medical Affairs at Rush-Presbyterian-St. Luke's Medical Center. Dr. Fried has been Professor of Medicine, The University of Chicago Pritzker School of Medicine and Acting Chairman, Department of Medicine, Michael Reese Hospital and Medical Center. His appointment was announced by Henry P. Russe, M.D., Dean of Rush Medical College and Vice President for Medical Affairs.

"Dr. Fried is an international recognized hematologist," said D Russe, "and is probably best know for his pioneer experiments i erythropoietin and for his bone ma row radiation and transplantatio studies. He is the author of mor than 100 scientific publications i his field."

Dr. Fried is also well known to th Medical Center because he was member of the Department of Med icine at Presbyterian-St. Luke' Hospital and director of the Clinica Hematology Laboratory fron 1968-71. In his new position, D Fried will be responsible for th function of all medical, non-surgica departments in PSLH and Rush Medical College.



Walter Fried, M.D.

A native of Frauenkirchen, Austria, Dr. Fried received his B.A., B.S. and M.D. degrees from The University of Chicago. He has served as a lieutenant in the U.S. Naval Reserve Medical Corps; as a member of the Care-Medico Team in Malaya; and as a volunteer physician to the Quiche Indian Mission in Chichicastenango, Guatemala. A member of many professional and academic societies, Dr. Fried has also served as president of the Chicago Society of Internal Medicine. J.P.

Japanese Nurses Study Rush Model

In 1973, Yama Kurihara, Director of Nursing Service at Toranomon Hospital in Japan, visited Rush-Presbyterian-St. Luke's Medical Center and was greatly impressed by the Rush model for nursing. After eight years of study and preparation, a patient classification system based on what she observed at Rush was implemented at Toranomon Hospital in 1981.

This summer three nurses from Toranomon Hospital together with 16 others from Southern and Central Japan came to Rush to learn more about the Rush model so that they can help implement a similar system eventually in hospitals throughout Japan. During their stay at the Medical Center the nurses attended lectures on the Rush model and observed nursing care on clinical units. Rush nurses described for them aspects of the Rush model, such as standards of practice, quality assurance, levels of practice, and the practitioner-teacher role.

Their visit was preceded by two years of planning by Kazuo Kodera, D. Sci., a physicist and Assistant Professor at Tokyo University, who teaches research theory to nurses at seven university hospitals in Japan. He arranged the trip for the nurses and prepared them for their visit by translating over 250 pages of material about the Rush model from English to Japanese.

One of the first changes the group hopes to introduce into the Japanese system of nursing is quality assurance programs. "In Japan," explained Dr. Kodera, "nursing care is mostly determined by the number of beds in a hospital. The patient classification system recently completed at Toranomon Hospital and also at Tokai University Hospital based on your model is working toward the establishment of a work load index. The nurses want to find out how much manpower and what kind of staff are required for quality care."

While in the United States, the nurses also visited several other hospitals in the Chicago and New York areas to observe a variety of nursing programs. They will continue to study nursing programs, emphasizing the Rush model, until 1984 when they will report their findings to 1,500 representatives of nursing and health care institutions as well as to government representatives in Japan.

"Changing the structure of nursing care in Japan will take a long time," Dr. Kodera noted. "We have just begun, so these nurses are really pioneers." J.P.

ames A. Campbell, M.D., president, Rush-Presbyterian-St. Luke's Medical Center center) and (fourth from left) Luther Christman, Ph.D., R.N., vice president, nursing affairs, with Japanese visitors.

Seek to Identify Potential Suicides

Predicting which severely depressed persons are most likely to kill themselves is the objective of research being conducted by Jan A. Fawcett, M.D., the Stanley G. Harris, Sr., Professor and Chairman of the Department of Psychiatry at Rush-Presbyterian-St. Luke's Medical Center.

Fawcett has studied data collected over the past five years from 950 patients diagnosed as severely depressed. The patients were seen at five university centers involved in a collaborative Psychobiology of Depression Project. Patients dying from suicide within six to twelve months of diagnosis exhibited a group of symptoms Fawcett describes as "clinical markers of suicide."

"Preliminary results of this (suicide) study tend to suggest clinical features of illness may be more important in identifying people about to die from suicide than the traditional indicators of negative events and suicide threats or attempts." Negative life events include divorce, losing a job and the death of a loved one.

"To our surprise," says Fawcett, "the suicide victims, compared with other depressed patients, suffered fewer negative life events and did not tend to admit to contemplating suicide. They were, however, suffering more often from a cluster of symptoms including hopelessness, alcohol abuse, hallucinations, social withdrawal and physical anxieties (sweats, tremors, heart palpitations)."

All patients in the study were screened using a standard interview form developed for this research—the Schedule for Affective Disorders and Schizophrenia (SADS). "By using the SADS interview," Fawcett explains, "the data gathering is thorough and standard. We are now working on developing a shorter version of the form to help clinicians assess suicide risk more accurately.

"It is our hope physicians will look for the clinical symptoms we detected, to screen out severely depressed patients needing suicide intervention."

Fawcett has two suggestions for helping patients suffering the symptoms linked to a high rate of suicide. He believes they require intense follow-up by physicians within six to twelve months of being diagnosed for severe depression—that's the time they are at highest risk of suicide. And he believes these patients should be provided with some kind of supportive intervention program to prevent their suicides during the high-risk period.

Fawcett and his colleagues at Rush are involved in the Psychobiology of Depression Project with scientists from Harvard Medical School, Columbia Presbyterian Medical Center, the University of Iowa, and Washington University (St. Louis). F.M.

New Device Aids Sleep Apnea Patients

Many Americans may be cured of a life-threatening disorder as a result of research conducted at the Sleep Disorder and Research Center of Rush-Presbyterian-St. Luke's Medical Center. In a study conducted over the past two years with 20 male volunteers, Rosalind D. Cartwright, Ph.D., has demonstrated the success of a tongue retaining device (TRD) in significantly reducing the incidence of sleep apnea—cessation of breathing during sleep.

Obstructive sleep apnea stems from blockage of the airway apparently involving either a sphincter-like closure of the throat or the collapse of the pharyngeal (throat) walls. When the tongue falls back at the same time, the victim stops breathing. Sleep apnea is diagnosed if these breathing pauses last at least 10 seconds and occur more than 30 times during a seven-hour sleep period.

"Loud snoring and excessive daytime sleepiness are often the first signs of the problem," says Dr. Cartwright, Director of the Sleep Center and Chairman of the Department of Psychology and Social Sciences. "Traditional methods of treating apnea have included drug therapy and, most often, tracheostomies, creating a permanent opening in the patient's throat."

By preventing the tongue from falling back and blocking the opening to the throat during sleep, the TRD, Cartwright says, has shown the same level of effectiveness in controlling sleep apnea as traditional surgical methods. Made of a clear rubber-like material, the TRD resembles a boxer's mouth guard with a bubble-like protrusion between the lips. The tongue is held in the protruding area by suction.

The patients' success with the TRD has not only curbed or cured their apnea, but changed their lives as well. "The patients we've helped say they've been reborn!" exclaims Dr. Cartwright. "They no longer fall asleep on the job or behind the steering wheel of a car. And, of course, their 'window rattling' snoring has ceased!"

The device will not replace surgery for severely-afflicted apneics, but it clearly is a viable alternative for moderately-afflicted apnea patients and for those who refuse su gery. "Severe cases of apnea ma require tightening of the muscle of the throat or surgery to help ope the nasal passageways," says Davi Caldarelli, M.D., Chairman of th Department of Otolaryngology an Bronchoesophagology and a co investigator in the sleep apne study.

Dr. Cartwright also worked wit psychiatrist Charles F. Samelson M.D., Schwab Rehabilitation Center, who invented the TRD. Ironica ly, Dr. Samelson designed th device to cure his own snoring an it was only after meeting Dr. Cartwright that he became aware o sleep apnea.

Dr. Cartwright is also directing federally-funded sleep apnea stud to test the effectiveness of the TR with a greater number of patients This could lead to FDA approval o the device for general use in treating sleep apnea. F.M

Friedberg Named Distinguished Alumnus

"He never looks for persona aggrandisement or credit, but he has mastered the technique of making others think that they have come up with a great idea, although it was

Rosalind D. Cartwright, Ph.D., displays sleep apnea device.

subtly planted and nurtured by him." This was one colleague's description of Stanton A. Friedberg, M.D., Professor and former Chairman, Department of Otolaryngology and Bronchoesophagology. Dr. Friedberg was named Distinguished Alumnus for 1982 by the Alumni Association of Rush Medical College at the Association's annual banquet in June.

A nationally-recognized expert on diseases of the nose and throat, Dr. Friedberg is a 1934 graduate of Rush. After completing an internship and residency at Presbyterian Hospital as well as residencies at Cook County and the Municipal Contagious Disease Hospitals, he joined the Presbyterian Hospital medical staff in 1938. He later served as a department chairman for 27 years.

Dr. Friedberg's keen interest in medical history led to his continuing work in support of the rare book room of Rush University's library. He is currently chairman of the Library/Alumni Publications Committee, a standing committee of the Alumni Association's Executive Council on which he served for many years. He is also a charter member of the Benjamin Rush Society.

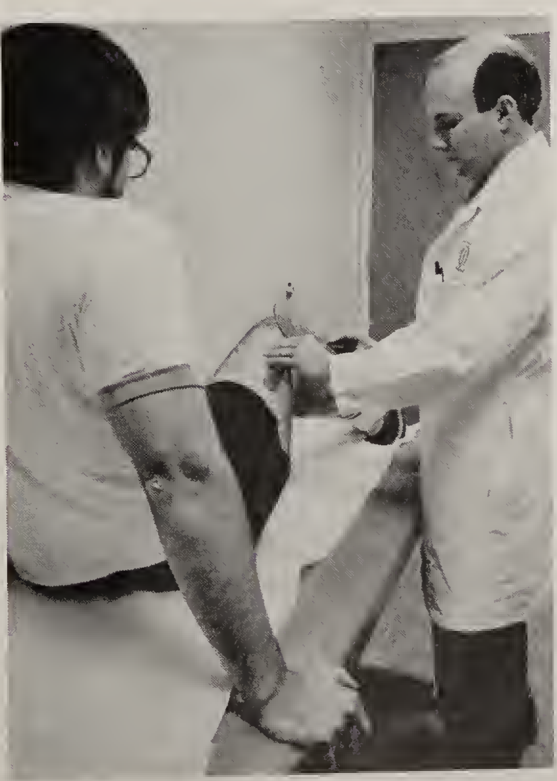
Throughout his career, Dr. Friedberg has held many leadership positions including the presidency of the American Bronchoesophagological Association, the American Laryngological Association, and the Chicago Laryngological Otological Society. He is also a member of Phi Beta Kappa and Alpha Omega Alpha and rose to the rank of major in the United States Marine Corps serving overseas during World War II. J.P.

Program Reduces Sports-Related Injuries

Somehow he had managed to play basketball for years without any significant injuries, but at age 35 his luck ran out. In the middle of a particularly competitive game, he twisted his knee and ended up on crutches for weeks. Then his knee started locking so severely that he couldn't straighten it out. Each time it happened he would be back on his crutches, often for weeks at a time. A few years ago, the only solution to his problem would have been major surgery, but through the RPSLMC Sports Medicine Program and a technique called arthroscopic surgery, he was walking without crutches three days following surgery. In four weeks, he was again playing basketball.

The Sports Medicine Program was initiated over a year ago to meet the needs of an increasing number of professional, amateur and weekend athletes. In addition to treatment, the program offers services related to prevention, diagnosis, and rehabilitation of sports-related injuries. Co-directors of the program are Glenn C. Landon, M.D., and Steven Gitelis, M.D., Assistant Professors, Department of Orthopedic Surgery.

"Society is becoming more sports-oriented," says Dr. Landon. "People are no longer giving up sports after graduation from high school or college. Along with that trend is a corresponding increase in sports-related injuries. We started this program to prevent such injuries and to develop better treatment methods for those athletes who are injured."



Glenn C. Landon, M.D., examines patient for sports-related injury.

Since many sports injuries are caused by too much exercise too soon, the program includes individualized conditioning programs for men and women interested in beginning a sports or exercise program. In setting up such programs, referrals are sometimes made to other medical specialists. "For example," says Dr. Landon, "an older person with a history of chest pain who wants to start jogging would be referred to a cardiologist or internist for a stress test and a general medical exam. Findings from these exams would be used to develop an appropriate exercise regimen."

Treatment of sports injuries is aimed at returning the athlete to full potential in the shortest time possible. Among the possible treatments for various kinds of injuries are ultrasound, heat and cold therapies, special machines for strengthening muscles, exercise, whirlpool therapy, electrical stimulation of muscles, and surgery. Arthroscopic surgery, a treatment which makes use of special miniaturized instruments to treat knee injuries, is dramatically shortening the recovery time for athletes.

Registered physical therapists guide the recovering athletes through a training program aimed at rebuilding strength and endurance. Various pieces of special equipment aid in this process. For example, the Cybex isokinetic dynamometer records progress and helps the athlete correct any muscle deficiencies.

The staff of the Sports Medicine Program is constantly seeking better ways to treat sports injuries through research. In one project, patients with knee injuries are evaluated in the Department of Orthopedic Surgery's Gait Laboratory in order to better understand the effects of the injury and find out why certain treatments are best with particular injuries. Explains Dr. Landon, "Some patients with ligament injuries will do well with just exercise alone, while others require surgery or bracing. We want to know why."

The Sports Medicine Program staff is also using a sophisticated computerized model of the knee, the only one of its kind, to analyze injuries and evaluate different surgical reconstructions. Another project involves the use of tendons taken from cattle as grafts to replace torn ligaments in the knee.

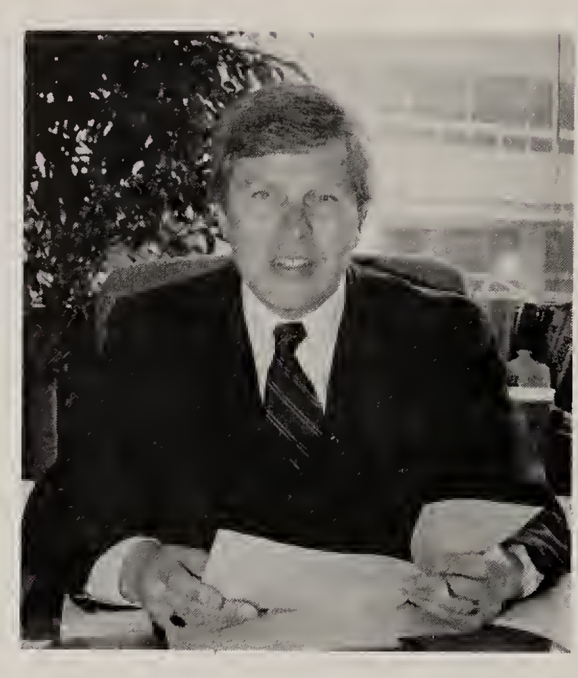
The present day enthusiasm for sports and exercise shows no signs of slackening. But the number of sports-related injuries does not necessarily have to increase along with the interest in exercise. Proper conditioning programs, such as those offered by the Sports Medicine Program, can prevent many of these injuries. Of course, not all injuries can be prevented. But a sports injury no longer means weeks of inactivity.

Says Dr. Landon, "In the past, the mainstay of treatment for injured athletes was immobilization and rest. Now we know that healing is accelerated by motion and exercise. As a result, we've dramatically shortened the time away from sports." J.L.H.

Zeisler Appointed Vice President—Finance

Karl Zeisler, J.D., M.B.A. has been named Vice President of Finance and Chief Financial Officer of Rush-Presbyterian-St. Luke's Medical Center. The appointment was announced by Donald R. Oder, Senior Vice President.

Zeisler was Vice President—Finance of Loyola University of Chicago from 1976-1981 and, most recently, Vice President and Director of Education and Health Finance at A.G. Becker, Inc. He has also served as Director of Executive Programs and Professor of Management in the Graduate School of Management at Northwestern University and Executive Assistant to the President and Professor of Business Administration at the University of Cincinnati.



Karl Zeisler, J.D., M.B.A.

A recipient of undergraduate degrees from The University of Chicago and Northwestern University, Zeisler earned a J.D. degree at Harvard Law School and an M.B.A. degree from Northwestern University.

His professional affiliations include the Hospital Financial Management Association, the American Bar Association, and the Financial Executives Institute. In 1981 Zeisler received the Hospital Financial Management Association's Cost Incentive Award for a Tax-Exempt Commercial Paper Financing Program at Loyola University. J.P.

Art Therapists Share Psychiatry Classes

This fall, 15 students from The School of the Art Institute of Chicago are joining 120 Rush Medical College second-year students in the "Introduction to Psychopathology" class as part of a recent teaching affiliation between Rush's Department of Psychiatry and The School of the Art Institute of Chicago.

Through the affiliation, Rush provides two, 3-hour courses during the fall and winter quarter for postgraduate art therapy students in the School of the Art Institute's certificate program in art therapy. These students have a minimum of a bachelor of fine arts degree and are studying to become registered art therapists.

While the psychopathology class is required of all second-year medical students, the other courses offered in the program are designed with the art students' needs in mind although they are also open to Rush University students. They include "Clinical Issues," in the fall quarter and "Treatment Options in Psychiatry" and "Development and Life Crises" in the winter quarter. The curriculum is formulated to help students develop a basic understanding of common psychiatric conditions which will build a base of knowledge for recognition and management of psychopathology in future clinical settings.

Don Seiden, A.T.R., Chairperson, Art Education/Art Therapy, the School of the Art Institute, characterized the program as an excellent example of how art and science complement each other. "Both types of students will benefit from the association," Seiden said. "We may even have medical students sporting artists' berets." J.P.

To Keep Weight Off Don't Diet, Change Habits

For those who want to lose weight, Ronette Kolotkin, Ph.D., Assistant Professor of Clinical Psychology, has unusual advice—"don't diet."

Dr. Kolotkin believes that long-term weight reduction is only possible through behavioral changes that revise eating habits, not short-term diets.

"When a diet is over," said Dr. Kolotkin, "old eating habits return and so does weight."

Through an ongoing, departmental research project, "Eating Patterns in Obese Persons Seekng Behavioral Treatment," she has been exploring this theory. As part of this study, Dr. Kolotkin has headed a weight control program at Rush-Presbyterian-St. Luke's Medical Center for chronic, severe obesity. Patients selected for the program must be at least 20 percent above desirable body weight, have no major medical complications, and be willing to make a six-month treatment commitment. Treatment takes place either in weekly groups of up to 12 members or individually. Dr. Kolotkin currently has about 20 regular members in the program.

"We work on behavior modification," she said, "to make lifelong changes in activities such as eating, physical activities, food shopping, and meal preparation patterns."

Another unique characteristic of the program is that it confronts the problem of relapse. "Most weight reduction programs are for a specific length of time," said Dr. Kolotkin, "usually about 10 weeks. They can't deal with this problem in so short a time, and relapse is a very common problem with people trying to control their weight." If necessary, Dr. Kolotkin continues to meet with patients after the initial six-month period. Often she stays in touch with former patients for years.

But perhaps the most important aspect of the program, said Dr. Kolotkin, is that it addresses the emotional problems that can accompany trying to lose weight.

"A lot of people with weight problems don't have much confidence that they can really lose weight and keep it off," she said. "They've dieted for years and have stored up guilt feelings from regaining weight. We redefine the concept of failure. Eating high calorie foods does not make you a failure or a bad person. You may have a setback, but setbacks are normal. Only giving up is failure. Also, we think progress is anything better than what you did before. If you ate ten cookies last week, then eating five cookies this week is progress."

Dr. Kolotkin is also beginning a new phase in her research, the Daily Experience Study, to compare the thoughts and moods during the day of normal-weight people, overweight people, and insomniacs. The 20 subjects in each group will wear a beeper that will sound approximately every two hours during the day on a random basis. At that time, subjects will record their thoughts, moods, activities, and other information, such as whether or not they have eaten since the last signal.

One goal of the study is to understand how people's eating and sleeping patterns affect their daily experiences and how their daily experiences affect their eating and sleeping. Dr. Kolotkin believes this information will have important implications for the treatment of eating and sleeping disorders. J.P.

Begin Four-Year Study of Medical Students

As many as 10 percent of practicing physicians have problems with alcohol and drug abuse or suffer from psychological or psychiatric difficulties that also hamper their ability to perform professionally. They have been referred to as "impaired" physicians and are a growing concern among medical educators as well as practitioners.

"It's quite possible," says Gerald S. Gotterer, M.D., Ph.D., Associate Dean for Medical Student Programs at Rush Medical College, "that changes could be made in the medical education program or student support network that could prevent such problems—changes that would help us to be more effective in helping students to reach their full potential."

But first it's important to identify the student at risk.

A multi-dimensional study just started at Rush is aimed at exploring how students adapt to the medical school experience. It is also designed to assess how various demographic, psychological, psychiatric and sociological factors affect personal, educational and professional outcomes of the medical education experience. The project is partially supported by the Kroc Foundation.

Ninety-six percent of the 1982 freshman class has agreed to participate in the study which will follow them throughout their four years of medical school. Students completed a series of questionaires and tests before classes started in the fall and follow-up testing is scheduled every six months.

According to Dr. Gotterer, special measures will be used to assess those variables which appear to be important influences on professional competence, alcohol and drug abuse, psychiatric problems, personal and professional relationships and specialty choice.

"The material collected in September probably represents the most comprehensive body of information about an entering first-year medical school class ever compiled." Dr. Gotterer says. "It is unique in that it covers such a wide range of variables."

Also involved in the study are: Edward J. Eckenfels, Assistant Dean for Academic Counseling; David C. Clark, Ph.D., Assistant Professor of Psychiatry, whose interest is in depression; Peter Zeldow, Ph.D., Assistant Professor of Psychology and Social Sciences, who is looking at personality variables; and Jeff Salloway, Ph.D., Associate Professor of Psychology and Social Sciences, who is focusing on social network variables.

A three-member student advisory group has also been formed including Barry Bikshorn, senior; David Bennett, junior; and Cathy Rives, sophomore. Steven Daugherty is research coordinator. K. K. K.

Nursing station in new Atrium Building.

1982: A Year of Achievements, Dedication and Renewal

"Now, by the power invested in me by the Trustees of Rush-Presbyterian-St. Luke's Medical Center, I declare these new facilities dedicated to the glory of God and to the service of man."

On May 25, 1982, James A. Campbell, M.D., president of the Medical Center, so brought to conclusion a year of achievement, dedication and renewal.

The Phase III construction and modernization program had been completed as part of a larger five-year plan that saw an investment of $162 million in facilities, endowment and program support.

The Campaign for the Future of Success, which had set a goal of $75 million in private philanthropy, surpassed its goal by over $8 million for a total of more than $83 million.

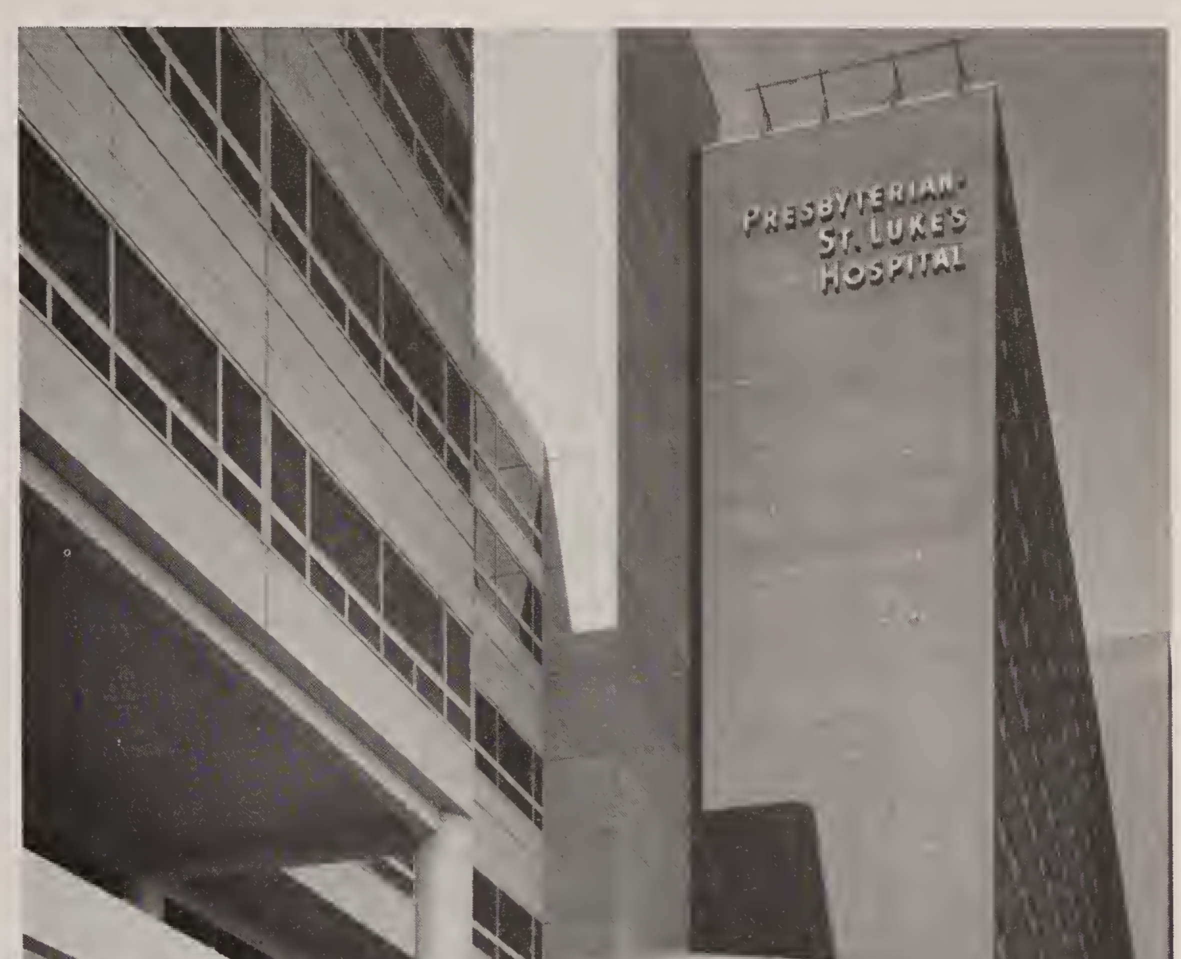
And at a series of dedicatory events at mid-year, friends and supporters of the Medical Center heard a number of national, state and community leaders provide different perspectives on the accomplishments not only of recent years but of the historic past as well.

President Gerald R. Ford, who had taken part in the public launching of the Campaign for the Future of Success in 1978, returned to Chicago to remind some 1,100 guests at a civic dinner of the strides made since the Medical Center was established in 1969 through the merger of Rush Medical College and Presbyterian-St. Luke's Hospital.

"That occasion back in November, 1978...gave us all an opportunity to review the progress you had made in founding Rush University, in establishing an academic medical center, and in building the Rush System for Health which at that time linked 25 hospitals, colleges and universities in six states," President Ford said. "I understand this superb cooperative system has now grown to some thirty institutions, that a new graduate college has been established, that your student body has grown by one third, and that... you will be dedicating an exciting

(From left) Harold Byron Smith, Jr., Chairman, Board of Trustees, The Honorable Gerald R. Ford, and James A. Campbell, M.D., President, Medical Center, at civic dinner marking successful conclusion of the Campaign for the Future of Success.

Operating room in Surgical Center.



trium Building interconnects with John L. nd Helen Kellogg Pavilion (right). Note "L" ain passing "through" buildings.

ddition to your patient care facilities –a new replacement hospital wing.

"Quality patient care is, when it's ll said and done, your primary purose and I commend you for your utstanding achievements in this rea, and particularly for your eadership in addressing the nation's umber one and number two killers, eart disease and cancer."

President Ford noted that there re some in our society who have xpressed doubt that the United tates will be able to keep its comitments to the elderly, to the poor, those in rural areas, and to many iddle class Americans who are in anger of being bankrupt by catatrophic illness.

"Well, I must respectfully disgree with that pessimistic assessnent and offer in evidence the xperience of Rush-Presbyterian-t. Luke's," he said. "Obviously, you re caring for the aged in our socity. You have adopted a 'fair share' pproach to care for the medically ndigent. You are training health rofessionals for medically undererved areas, and you are deeply oncerned about cost-effectiveess and—if we can go by the *arvard Business Review* last fall Sept. 1981)—through careful mangement of resources and innovave planning you are doing someing constructive about it."

A few days later at the dedication f the Atrium Building and Woman's oard Cancer Treatment Center resided over by Harold Byron mith, Jr., chairman of the Board of rustees, messages were received rom the White House and the overnor of Illinois, and were delivred personally by the Mayor of Chicago, Jane M. Byrne. Mayor Byrne praised the Medical Center for keeping its commitment to the people and "because in the future and in the beautiful growth taking place in the City of Chicago, it is something that we can point to with pride."

While the new Atrium Building and Cancer Treatment Center were the culmination of the Phase III program, other facilities either constructed, modernized or renovated included:

- The 11-story Professional Building Addition dedicated to outpatient priorities and which also includes a conference center.
- A new 800-seat cafeteria and bookstore in the Academic Facility.
- A 1,500-space addition to the parking garage which, after O'Hare Field, is the largest in the City of Chicago.

For the first time, all the principal buildings on the 33-acre Medical Center campus are connected. Four bridges at the fourth floor level make direct access available from the Johnston R. Bowman Health Center for the Elderly at the south edge to the John L. and Helen Kellogg Pavilion at the north and from the Jones Building on the west to the new Atrium Building on the east.

Operating rooms formerly located in seven separate buildings have been consolidated into a single functional surgical center with 22 operating rooms, 32 surgical intensive care beds, 27 recovery beds and their supporting elements.

Modernization for essential services in other areas has been provided. A supply and distribution center almost two blocks square has been constructed at sub-basement level to serve the over 1,000 beds now on the Medical Center campus.

Over and above achievements in physical plant, an overview of the Medical Center today shows:

- A record number of patients, 34,728, was admitted to Presbyterian-St. Luke's Hospital, the Sheridan Road Hospital, and the Johnston R. Bowman Health Center for the Elderly. Surgical procedures came to 17,453.
- The Medical Staff now numbers 747; the nursing staff, 1,860; total employees, 7,648.
- Some 2,300 degrees in the health professions have been awarded since the establishment of Rush University. There are currently 1,563 students enrolled, including 419 professionals in postgraduate and fellowship-level programs.
- Endowed chairs have increased to 30.
- Over $10 million was expended on 960 research projects in the past year.
- Enrollment in the ANCHOR Health Maintenance Organization has increased to almost 75,000 members.

Noting the great resources which had come together at the Medical Center, Dr. Campbell concluded his remarks at the civic dinner in May with expressions of appreciation to the individuals, corporations and foundations whose philanthropy had been in large part responsible, going on to say:

"The direction of Rush-Presbyterian-St. Luke's Medical Center is forward. This generation carries the responsibility for the next. That is our privilege, not a burden, and we are glad to go ahead. And as we do, we also look to the young people who will be our successors and who will give fresh and energetic renewal to the ideals that have passed from generation to generation."

The Magazine is a publication of the Office of Philanthropy and Communication, Rush-Presbyterian-St. Luke's Medical Center.

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